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POSTWAR MEDICINE

BRIGADIER GENERAL FRED W. RANKIN, M.C., U.S.A.

THE realization that I am about to relinquish the office of President of this Association prompts me to pass in review our record, crammed with exciting events, and to scan the horizon anxiously for gathering storms which may imperil our course and test further our courage and endurance. That we have kept a steady course set toward the maintenance of the health of the nation and its armed forces during these turbulent times of world-wide hostilities, despite hurried preparation, bespeaks our Association's self-sacrificing devotion to duty and emphasizes its indomitable spirit and resolute determination—characteristics distinctly American. Never during its history or, for that matter, during the history of our country, has there been the urgent demand which current exigencies have imposed on our special talents and skills. The rapid, thorough and efficient manner in which these demands were met has been due in great measure to the astute foresight of our leaders, who, long before that fateful day, when our enemies treacherously launched us into this holocaust, began careful preparations for the inevitable requirements which develop, as a consequence of the military, industrial and continuing civilian needs for adequate medical care. That these plans were well contrived and intelligently executed is forcefully demonstrated by the continued improvement in the health of our nation and our armed forces, despite the fact that about 40 per cent of the usable medical personnel of the country has entered the services, and the added burden of a parallel gigantic industrial expansion that has been placed on the thinned ranks of the remaining civilian physicians. My deep gratification in reporting this thrilling and inspiring performance is heightened only by my humble respect and intense appreciation for the high honor you so generously bestowed on me as your president in this trying period, and for the distinct privilege in participating in these activities and in associating with the scrupulously sincere, assiduously attentive and particularly competent members of the Board of Trustees and the Executive Staff of this Association.

During the past year our country has been feverishly engaged in mobilizing and preparing its industries and manpower for war on a scale unprecedented in its history. All efforts have been directed toward a single fundamental purpose—the creation and preparation, as rapidly as possible, of a formidable military machine with irresistible striking power. This has required a national metamorphosis in which the medical profession has participated eagerly and wholeheartedly. Indeed, no other group has shouldered its responsibilities in this emergency with greater self-abnegation, more cheerful enthusiasm and more efficient adaptability. On us devolved the obligation of establishing a bulwark against epidemic disease and military casualties, both on the home front and on the far-flung battlefields of this globe-encompassing war. Essentially our function is concerned with the conservation and maintenance of health. That we have performed this function successfully is demonstrated by the fact that we have given our civilian workers production superiority in the rapidly expanding war-geared industries, and our armed forces combatant superiority in the jungles of Guadalcanal, on the gale-swept North Atlantic and on the blistering deserts of North Africa.

President's address delivered before the House of Delegates of the American Medical Association, Chicago, Illinois, June 7, 1943.

The most difficult and exigent phase of the war, i.e., rapid mobilization, has been expeditiously concluded. Now our paramount problems are concerned with logistics; production has been achieved. Consideration is already being given to postwar planning even though it may seem little warranted at this time. It should be realized, however, that only by such long range charting can the confusion and disorder which characterize immediate postwar reconstruction periods be averted. The manifold problems arising from these future developments will deeply concern and intimately affect us all. A rational solution of these problems depends on their thorough comprehension; but first they must be sighted as distantly and as clearly as possible. Accordingly we set a watchful gaze on the horizon.

It must now be apparent, even to those who have been most purblindly recalcitrant, that mighty influences are at work to effect epochal changes in the complexion of medical practice. While it would appear that these influences have suddenly loomed on the medical scene, it should be realized that they have long been forming and that the present military conflict has merely hurried their development and magnified their significance. That they can no longer be ignored seems difficult to controvert. We must face realistically these tremendously forceful socio-economic trends which are intimately involved and deeply concerned with the nation's medical problems. The directional sign posts of postwar planning may now be clearly read by proposals already made for broadening the social security program and extending the nation's economic resources to assure "adequate medical and health care for all, regardless of place of residence or income status." The complex connotations and inevitable implications of these plans and proposals make it quite apparent that the old system of medical practice will be considerably modified. If the limitless and baneful potentialities that can be projected into the science and art of the future of medicine are to be averted, it becomes imperative in this transition period that the wise and tempered counsel of the medical profession exert its proper influence. That our medical descendants should look back and point a culpable finger to our page of history which would read that our actions were "too little and too late" is a plaguing thought. Our responsibility in approaching and participating in these evolutionary processes is greater than many of us have been willing to admit; indeed, it is intimately involved with the medical security of our country as well as of our profession. Have we so long basked in the luxuriating rays of medicine as the apotheosis of professions that we have become languid and inelastic in our attitude and hesitant and fearful in our response to existing socio-economic developments? I sincerely hope not.

Our motives are inherently sincere. They are based on desiderata to which we have held tenaciously and which we must guard assiduously lest future progress toward higher standards in medicine and professional tenets be jeopardized. Our ultimate objectives consist essentially in the provision of the best possible preventive measures against disease, the institution of the best possible forms of therapy and the ceaseless pursuit of advances and improvements in technical procedures and other prophylactic and therapeutic measures for clinical application. It requires no percipient degree of rationalization to realize that the complete fulfillment of these objectives for the entire nation would necessitate the development of a comprehensive medical service.

It is becoming increasingly apparent that the trends now gathering momentum are directed toward some form of national health service as an integral function of the state. Proposals of this nature by governmental postwar planning agencies, both here and abroad, have been the subject of deep consideration, wide editorial comment and cognent discussion. This mood has been further reflected in recent comments by various medical and nonmedical writers who have penetrated with incisive clarity to the very heart of this controversial subject. It has been stated by some that the financing of this type of medical service is a socio-economic consideration and not a medical problem. While it may be argued that financial provision for the institution of such a service is a function of the commonwealth, I am impelled to emphasize the fact that the structural character of the organization of any such type of health service is tremendously important to doctors and is vitally concerned with the execution of their professional function. This entire subject must be brought into sharp focus by the light of trenchant and dispassionate thought in order to observe both the desirable as well as the possible apprehensive aspects of the contemplated proposals.

In the national fulfillment of our altruistic objectives it must be recognized that two essential provisions are required, namely, professional and financial facilities. It must also be recognized that the successful attainment of these objectives cannot be accomplished if in the implementation of any plan or proposal the professional facilities are subjugated to the authoritative management, traditionally dictated by political whims, of some legislative council controlling the financial provisions. These two provisions are interdependent and cannot be distinctly separated in approaching our objectives. The successful application of the former requires certain facilities supplied by the latter, which in turn can be guided intelligently only by professional knowledge. These vastly significant facts must be sincerely appreciated by all parties, both medical and nonmedical, concerned with this problem in their approach to its solution.

It is necessary to realize that the establishment of one of these contemplated medical services does not sound the death knell of private practice of medicine. These two forms of medical service are not incompatible, and their consideration must not be regarded in the light of apostasy but rather in the light of realism. They become incompatible only if in attempting their admixture certain undesirable ingredients are added. The problem is too difficult, the time is too short and the stakes are too thigh for all concerned to allow these factors to influence our actions. All efforts must be harmoniously combined and closely coordinated toward the elaboration of an intelligent program which will permit a democratic as well as a comprehensive medical service with equally high professional and ethical standards.

It should be clearly understood that this embraces the concept of existing freedom of thought and action in the exercise of our profession and our scientific pursuits. No one is more keenly aware, no one more fully cognizant than I, of the resultant stultification of the science and art of medicine which would be occasioned by any loss or curtailment of this freedom. Here is a principle which is more than a heritage; indeed, it forms the supporting foundation of the art of medicine and the guiding light of the science of medicine. It was freedom to think and freedom to express thought in speech and in writing unhampered by the fearful consequences of traditional or legislative authority that permitted medicine to progress to its present exalted position in the field of science, and it is absolutely essential in its continued advancement. It is a principle therefore, which we can never relinquish.

Since the challenges now confronting medicine will undoubtedly be multiplied as we approach the termination of this conflict and the commencement of the difficult reconstruction period, it becomes our responsibility and duty, with ever mounting importance and increasing urgency, to prepare to meet them now. In addition to the problems concerned with medical practice, we must be ready to meet the related problems of postwar rehabilitation of physicians—physicians whose entry into service involved personal sacrifices and the revamping of plans and ambitions, and whose return to civilian pursuits will necessitate numerous and variable readjustments and even resumption of specialized training.

These are prodigious tasks with manifold ramifications and far-reaching significance, but tasks which we must face with unflinching resolve. Their achievement will demand not only sincerity of interest, integration of effort and clarity of thought but also active and close collaboration with appropriate governmental agencies. We cannot disregard the growing interest of the public, the government and various lay groups in the administration of medical care; nor can we afford to engage in a struggle for domination. The solution to these problems and the attainment of our objectives do not lie in that direction. They can be approached more expeditiously by a willingness to share their responsibilities and a readiness to coöperate in their consideration. The importance and urgency of these various problems commend the immediate establishment by this Association of suitable agencies for their investigation. In the institution of these agencies the purpose and vast significance of their function, the sharp delineation of their problems and the need for their collaboration with others should be emphasized. They must also be impressed with the importance of these studies and their resultant proposals on which so much depends. Indeed, the plan of action which we institute, the attitude which we manifest and the intelligence, zeal and judgment which we employ now in our efforts to solve these problems will greatly influence and actually determine the future standards of the medical service of our country and the cultural standards of our profession.

VIRUS DISEASES OF ANIMALS

W. L. BOYD

Division of Veterinary Medicine, University Farm

Saint Paul, Minnesota

LOEFFLER and Frosch, in 1897, demonstrated that the etiologic factor of foot-and-mouth disease was a filtrable virus. Since that time much active research has been done in the field of viruses in relation to animal disease. It is known that there are at least thirty-eight different diseases of animals caused by viruses. While many of these diseases do not exist within the borders of the United States, the number occurring here is important; and in some species of domesticated animals diseases caused by viruses are among the most serious with which we have to contend.

Virus infections ocurring in both animals and man include rabies, equine encephalomyelitis, vaccinia, psittacosis, foot-and-mouth disease, louping-ill of sheep and equine pernicious anemia. With the exception of foot-and-mouth disease and louping-ill, all the above mentioned diseases occur in the United States.

With regard to the economic importance of virus diseases in farm animals, we have no hesitancy in placing hog cholera in the very front rank. This disease is responsible for the greatest economic losses in swine. Introduced into the United States in 1883, it spread rapidly throughout the Corn Belt section of the country. It was first believed that hog cholera was caused by a microscopic organism, *Salmonella choleræ-suis*, which was discovered by Salmon and Smith in 1885. In 1903, de Schweinitz and Dorset discovered that the blood of cholera-infected swine did not lose its infectious nature after having been passed through bacteria-retaining filters. Continued research by Dorset, Bolton and McBryde, which revealed that hog cholera was caused by a filtrable virus, led to the development of an antiserum in 1908. The virus of hog cholera is found in practically all body tissues, as well as in the excretions and secretions of the hog. The discovery of the virus and the development of anti-hog cholera serum proved to be one of the most notable achievements of the Bureau of Animal Industry.

Notwithstanding the fact that the simultaneous method of immunization is highly satisfactory if properly performed, hog cholera continues to take a heavy toll each year. Recent developments in the field of hog cholera research have brought forth new preventive agents in the form of vaccines. These vaccines, although still in the experimental stage, give promise of becoming highly efficient agents for the control of this important infectious disease. These vaccines are chemically prepared, one from tissue extracts and the other from the blood of the cholera-infected pig.

Equine encephalomyelitis, when viewed from an economic standpoint, is second to hog cholera in importance. The virus of this disease, however, unlike that of hog cholera, is capable of infecting a wide variety of hosts, and for this reason it seems apparent that the term equine encephalomyelitis is a misnomer.

Within the past ten years, encephalomyelitis has become the most important of all diseases of the equine, and now that it is known to occur in man constitutes also a definite problem in public health. The virus of this disease was discovered by Meyer, Haring and Howitt, in 1931. Within a comparatively short time it spread to almost every state in the Union. The most extensive outbreak occurred in 1938, when approximately 185,000 cases were reported. There are two strains of the virus, one known as the Western strain and the other as the Eastern strain. The Eastern strain has shown little inclination to spread, being confined, with one exception, to the eastern seaboard states. Eklund and Blumstein, in November, 1938, reported that six cases of encephalitis had appeared among people in rural districts who had been in contact with horses known to have been affected with encephalomyelitis. During the same period, Fothergill and his colleagues reported finding Eastern strain of equine virus from human cases in Massachusetts. Also in 1938, Howitt succeeded in isolating the Western strain of virus from the brain of a child.

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It has repeatedly been shown that susceptibility to this disease is greatest in young horses and that it reaches the height of its frequency during the summer and early fall. The cessation of the disease is abrupt with the occurrence of killing frosts.

As shown by Kelser, biting insects, particularly mosquitoes, constitute the chief vectors of the virus. A wide variety of avian and animal species can be infected with the virus of encephalomyelitis. Among these are the chicken, dog, goose, owl, pigeon, turkey, flicker, killdeer, pheasant and quail. Some of the above fowls have been found to be natural reservoirs of the virus.

Horses can be given a high measure of protection against encephalomyelitis through vaccination. The present-day vaccine is prepared from the chick embryo and is administered intradermally in two doses of 1 c.c. each, one week to ten days apart. We are of the opinion that through widespread vaccination of horses and mules, we can greatly assist in preventing the infection in man.

Rabies is one of the oldest of the known infectious diseases, and like hog cholera, is a perennial problem. With regard to host selection, however, it differs widely from the virus of cholera in that it possesses a very wide range of pathogenicity. The dog is the animal most commonly affected, although other carnivorous animals are often involved. The disease is transmitted from animal to animal and from animal to man by the bite of an infected individual. With the exception of Australia, this disease is world wide in distribution. In Minnesota, rabies is confined largely to the urban areas. Only rarely do we encounter the disease in our farm animals.

From the standpoint of diagnosis and control, rabies presents a most difficult problem. The control should be easy, but due to public clamor against restrictions upon the activities of the dog as related to quarantine and muzzling restrictions, the institution and enforcement of effective control measures are most difficult. The successful control of vicious and nondescript dogs would, in our opinion, be very effective in lessening the incidence of the infection.

Interest in vaccination as a control measure in dogs is growing. At present, however, results have not been sufficiently encouraging to rely upon vaccination as a measure to protection, unless in conjunction with rigid quarantine measures. We predict that rabies will not be satisfactorily controlled in this country until dogs are kept under better control and until the general public will acquiesce to proper disposal of stray and ownerless dogs. Any dog which has bitten a human being should be considered as a rabid animal until proved otherwise. This we feel should be the advice of every physician, regardless of the history of the case.

Foot-and-mouth disease, also known as aphthous fever and vesicular fever, is a highly infectious disease attacking chiefly ruminants and swine. Man also is susceptible. The disease at present is prevalent in central Europe and is also present in Asia, Africa and in certain portions of the British Isles and our South American countries. At the present time, Canada and the United States are free from this disease.

The United States has been invaded by the virus of this disease on nine different occasions. In each instance, the disease has been stamped out by the vigorous activity of the state and federal governments. The first outbreak occurred in 1870. It recurred in 1880, 1884, 1902, 1908 and in 1914, when it became quite widespread. After that it did not recur until 1924, when the outbreak was confined mainly to California, where the disease not only occurred in domestic cattle but also involved a large number of wild deer.

As in many other virus diseases, diagnosis is difficult. Differentiation of this disease from other similar ailments is dependent upon animal inoculation. Calves and horses are usually employed for inoculation purposes. If the virus of the foot-and-mouth disease is present, the calves will show the characteristic vesicles, while the horse will remain unaffected. Vesicular stomatitis, a highly acute virus disease of horses and cattle, is fairly common in Minnesota during the summer season. Because of its close resemblance to foot-and-mouth disease, its presence at first is quite alarming. Its occurrence in the horse, however, serves as a ready and reliable means of differentiation.

Vaccination for the control of foot-and-mouth disease has been tried in several of the European countries, but while it gives a certain amount of protection, it is very far from being satisfactory as a control measure. In general, the various methods of diagnosis as applied to virus diseases are far from being satisfactory. This

is especially true of hog cholera, rabies, equine encephalomyelitis, and pernicious anemia.

The pox diseases of animals include cowpox, sheep pox, fowl pox and swine pox. These infections are closely related, the clinical picture in all animals being quite similar. With the exception of cowpox, which may be transmitted to man, all are apparently adapted to a single host.

In connection with fowl pox, it may be said that this disease is spread largely through mosquitoes. From the standpoint of immunization it may be stated that vaccination, though crude, is a fairly satisfactory means of control if performed at a favorable time in the life of the bird to avoid the production period. The age of the bird is important, the ideal period being from eight to ten weeks of age. Immunization of fowls by vaccination is equivalent to giving a mild attack of the disease. As yet no form of vaccination has been developed for the control of swine pox, sheep pox, or cowpox.

Infectious equine anemia, or what is more commonly known as swamp fever, has quite a geographical distribution within the United States, but it is decreasing in frequency each year. This disease usually runs a chronic course. Experimentally it has been transmitted by the common stable fly, *Stomoxys calcitrans,* and certain of the more common species of mosquitoes. The losses resulting from this disease are principally from the standpoint of inability to work. In one or two cases this disease has been reported to occur in man.

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FUNDAMENTAL ASPECTS OF VIRUS DISEASES

ROBERT G. GREEN, M.D.

Minneapolis, Minnesota

VIRUSES represent a group of microscopic and submicroscopic disease-producing agents which are variable in size and grow only as intracellular parasites in living protoplasm. An erroneous idea that viruses are simple chemical agents has arisen from some of the studies conducted on the smaller viruses, which have been described as virus molecules or even as living molecules. Such descriptions are not applicable to viruses in general, as the largest of the viruses seem to differ very little from ordinary visible bacteria. Viruses range in size from the magnitude of the smallest visible bacteria such as *Pasteurella tularensis,* down to about 1/25 the size of *Pasteurella tularensis,* so that the smaller forms are well beyond the limit of microscopic visibility. The range of magnitudes of viruses extends from the range of wave lengths of ultraviolet light down to the magnitudes of the longest x-rays. Any concept of viruses must include this variability of their dimensions. While the nature of viruses is not fully established, viruses are best explained as incomplete, or partial, microbic forms—microbes that have become more or less simplified and correspondingly smaller as a result of their parasitic existence.

Growth of a virus within a cell produces several effects, the end result of which seems always to be dissolution of the cell, which allows the virus to escape and attack other cells. One effect produced by many viruses before necrosis becomes evident is the stimulation of inclusion-body formation. The inclusion bodies may be intranuclear or they may be cytoplasmic. In some cases the inclusion bodies are finely granular, and the granules represent particles of virus. In

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other cases the inclusions appear to be derived largely from the cell constituents. As the inclusion bodies produced by any virus are of a single type and are generally uniform, they are helpful in identifying a particular virus. Another effect produced by some viruses is stimulation of the host cell to grow and thereby produce tumorous lesions. Rabbit horns, which are infectious papillomas occurring in wild cottontail rabbits, are an example of lesions resulting from such virus activity. The oral papilloma of dogs is another tumor produced by an easily-demonstrated virus.

In their stimulation of the growth of tumors and in the production of generalized disease, viruses are specialized as to the kind of cell which they invade. The rabies virus, for example, seems to grow only in nerve cells; and the papilloma virus of dogs is not only restricted to growth in epithelial cells, but is even restricted to growth in that type of epithelial cell found in the oral cavity. The yellow fever virus is capable of growing in several types of cell, such as hepatic cells and nerve cells. The smallpox virus grows in cells of the skin epithelium, in nerve cells, and in various types of less differentiated cells. In general, a virus seems especially adapted to grow in some type of differentiated cells, but it also has the ability to grow in such undifferentiated cells as make up the reticulum of organs. The kind of cells that a virus invades determines the nature of the disease produced and, to some extent, determines the severity of the infections in cases in which cells invaded are highly essential to life. If a virus has the ability to invade more than one kind of cell, natural variations in its tendency to invade one type of cell more than another result in a variable picture of the clinical disease it produces. I shall discuss later how advantage may be taken of these variations of cell specialization in the artificial modification of viruses.

It has already been pointed out that viruses are disease-producing agents specialized to grow within cells, and further specialized to invade certain kinds of cells. Another important specialization of viruses has to do with the kind of animal in which it produces disease. The range of animal hosts that a virus may invade is also a character of the virus. For some viruses the host-range is very great, as it is in the case of rabies, which has the ability to invade any kind of bird or mammal. The virus of equine encephalitis appears similar in this respect, as it has now been isolated from such diverse species as horses, ground squirrels, and pheasants. The canine distemper virus is much more restricted in its invasive properties, as this virus seems capable of producing distemper in the members of only three, comparatively related, families: the weasel family, the raccoon family and the dog family. The viruses that produce tumors seem to be most highly restricted as to the species of animals that they can invade. The virus of the rabbit papilloma will grow only in certain members of the rabbit family. The virus producing oral papillomatosis of dogs will infect only dogs, and is not infective for the closely related red fox.

The specific characters of any virus include the range of cell types in which the virus will grow and the range of animals in which virus invasion can occur. For some viruses, such as the rabies virus, which seems to grow only in nerve cells, there is a characteristic high restriction in invasive properties for cell types. At the same time this virus is capable of producing rabies in an extremely broad range of animal hosts—in fact, in any mammal or bird. On the other hand, some viruses may be restricted as to the kind of animal in which they produce disease but have the ability to invade a variety of cells.

The most highly specific of all viruses appear to be those that have taken on the special character of stimulating growth of the host cell. Their invasive power seems to be limited to a single type of cell in a single species of animal. This has been demonstrated experimentally in the case of a great many animal tumors that are now known to be caused by viruses, by the accomplishment of transmission through the inoculation of the same type of cell and the same kind of animal in which the original tumor occurred. Because of this high specialization of tumor-producing viruses to the kind of host cell that they invade, the direct demonstration of a virus etiology of a human tumor would seem to depend upon a similar procedure.

A significant advance in the techniques of handling viruses was made in the introduction of chick embryo as a culture medium. The essential character of chick embryo with regard to virus cultivation is that the embryonated egg rep-

resents a mass of cells that are embryonic in type, or in which cellular specialization is not greatly advanced. Likewise, in the embryonated eggs there is considerable lack of species differentiation. Many viruses can be grown in the undifferentiated tissue of embryonated eggs that cannot be grown in fully formed animals, which possess specific cell-types and species identity, unless the animals happen to meet the rigid requirements of the viruses as to cell-types and species.

In their general aspects, virus diseases are not markedly different from diseases caused by bacteria and protozoa. Like other infectious diseases, they are transmitted from one host to another by such simple means as direct contact, as in the case of influenza, and such complex means as transmission by a biting insect, as in the case of yellow fever. Virus diseases differ from at least many microbic diseases principally in that the apparent damage is somewhat more systematic as a result of the fact that viruses grow only in certain kinds of cells, to which the damage is confined.

A blood-borne immunity is produced by virus diseases that is not significantly different from that produced by microbic diseases. Antibodies appear in the blood which may agglutinate or precipitate virus particles, or produce complement fixation. Further, antibodies can be demonstrated which will inactivate the virus, either temporarily or permanently. Evidence is developing that in virus diseases there is also a special kind of immunity, which may be described as *cellular immunity,* in which the cells themselves become refractory to virus invasion or growth, quite independent of blood antibodies. This is an aspect of virus immunity which will take on added importance as virus studies are pursued further. Most virus infections result in a permanent immunity; but in certain virus diseases, as in the case of some of the microbic infections, the immunity existing after recovery may gradually decrease to a point at which the individual is again susceptible.

Artificial active immunization against virus diseases may be accomplished by the injection of large concentrations of inactivated virus, or by the use of attenuated or modified strains of a virus, which are inoculated while still alive. Killed-virus vaccines, ordinarily prepared by treating with formalin tissues that contain the virus, are not practicable for immunization against most diseases because such infected tissues as can be obtained for their preparation usually contain a very low concentration of virus, and many injections of the vaccine must therefore be given to produce an appreciable immunity. Moreover, the immunity from this type of vaccine is relatively short-lived. In the case of equine encephalitis a rather successful killed-virus vaccine has been developed because a high concentration of virus can be obtained by cultivation in chick embryo. It has been stated that within one embryonated egg an amount of virus can be produced that would correspond to the amount of virus found in the brains of 40,000 horses dead of this disease.

The most successful type of vaccine yet developed for any disease is the modified live-virus type, of which the classical example is the vaccinia virus. The process of experimentally modifying a virus seems to consist in selecting variants by choosing a kind of animal and a kind of tissue, and fostering growth of the virus by artificial propagation. In terms of virus specializations, it appears that a vaccinia virus suitable for inoculating human beings is made by adapting pox virus to calves or rabbits or some other animal highly unrelated to man and further adapting the virus, by skin-to-skin transfer, to a type of specialized cell represented by the skin epithelium, and probably also adapting it to such undifferentiated cells as accumulate in the area of infection. Passing the yellow fever virus through mice by a series of inoculations of brain tissue as the selected source of virus, into the brain as the site of inoculation, results in a virus that has a special affinity for nervous tissue. As the virus becomes highly adapted to the mouse as a host species, its virulence for the mouse is increased, while its pathogenic properties for the unrelated human being are lessened. Likewise, the distemper virus, which is capable of invading members of the weasel, raccoon, and dog families, gains greatly increased virulence for the ferret upon serial passage through that species, and at the same time becomes less virulent for foxes and dogs. Thus, the distemper virus, which has become extremely virulent for ferrets and produces a rapid and highly fatal type of distemper in them, can be injected with impunity into young foxes and dogs as a vaccine.

In the field of virus research we seem at this time to be groping for principles to guide us in modifying viruses so as to convert them to types that can be used as vaccines and as such will produce mild, immunizing infections. From work that has been accomplished thus far, two such principles are evidently emerging. One principle is that the virulence, or invasive powers, of a virus for the human or an animal species can be reduced by highly adapting the virus to some unrelated animal species. The second principle is that a milder infection will be produced by a virus of reduced virulence if the virus is also adapted to grow in a type of cell which will absorb the damage of virus growth with the least harm to the individual as a whole. These two principles seem to underly the changes that have been brought about in viruses in the case of live-virus vaccines used in the control of smallpox, canine distemper and yellow fever. A pox virus, which maintains its character as a vaccinia virus, apparently does so by adaptation to an animal species such as the rabbit, calf, or camel—species highly unrelated to man—and by further adaptation, according to the second principle, to skin epithelium and undifferentiated cells found in the local lesion produced by the virus. The canine distemper vaccine virus, which I have termed a distemper-oid virus, is highly adapted to the ferret, a species rather unrelated to the dog, and is adapted by selection to grow specifically in undifferentiated and lymphoid tissue. The modified virus used in the yellow fever vaccination is a yellow fever virus first adapted to mice, a species highly unrelated to man, and then adapted to the chick embryo, which is much further removed than the mouse in relationship to man, and in addition is not fully developed in species character. In the chick embryo the yellow fever virus is also adapted to growth in types of cells which, in general, have an incomplete differentiation. To a certain extent, modification of a virus is used in the preparation of rabies vaccine. In this case the virus is passed through a rabbit until it is highly adapted, or fixed; but the cellular specialization remains the same as for the original virus, since the virus is propagated in the central nervous system in which the virus also grows in the natural infection. While these principles of virus modification, regarding kind of animal and type of tissue, may not be entirely valid, and certainly are incomplete, they at least form a pattern that may be followed experimentally in efforts to develop new virus vaccines.

An unfavorable feature of the use of modified viruses for immunization lies in the occasional occurrence of complications, sometimes much delayed in their appearance. The paralysis that sometimes develops during the process of rabies vaccination has been described as a mild form of the rabies infection. Postvaccinal encephalitis following smallpox inoculation is well known, and encephalitis has been reported following yellow fever vaccination. However, such postvaccinal effects do not seem to be an inevitable aftermath of vaccination with a live, modified virus, since no such complication has been observed in the inoculation of many thousands of foxes, over a period of several years, with a modified distemper virus. Even the use of killed-virus vaccines, entirely harmless in themselves, may be attended by complications in the presence of an epidemic. When a mink herd is vaccinated with killed-virus vaccine during the course of a distemper epidemic, the epidemic, as such, is controlled, but some of the vaccinated animals continue to die from an acute encephalitis related in some way to the distemper virus. From the information now at hand, it would seem that the ultimate control of virus infections will depend, in large part, on the development and use of live, modified virus vaccines.

The most recent discovery in the field of viruses is one that apparently belongs entirely in the realm of virus diseases. It has been observed that the presence of one active virus infection may prevent the development of a second virus disease upon experimental inoculation. This has been called an interference phenomenon and also a cell-blockade. A virus modified to a point of harmlessness likewise appears to interfere with, or blockade, a more virulent virus of the same kind. The nature of this antagonism is not at all understood, but it would seem that the phenomenon offers tremendous possibilities for development and that highly modified viruses may be found useful in the control of virulent virus infections during an early stage of a disease.

The indefinite status of most of the fundamental problems in the field of viruses is a reflection of the rapid growth of a new science. The field of viruses today would appear to be passing through a surge of development such

as bacteriology went through in the two decades following 1880. The most promising feature of this development is the introduction of two new instruments for use in scientific study: the ultracentrifuge, whereby viruses can be purified; and the electron microscope, by which viruses can be photographed. The knowledge now being developed in the field of viruses must bring into medicine many new procedures and materials for the control of infectious disease.

NUTRITION IN NORMAL ADULTS

JOHN J. BOEHRER, M.D.

Minneapolis, Minnesota

OF all the areas of knowledge which are being explored today there is none which exceeds the field of nutrition in volume of discovery, in heat of controversy, or in the confusion which so inevitably accompanies the working of any such bonanza.

In many respects the present period in the science of nutrition closely resembles the "golden age" of bacteriology, those hectic days of the last two decades of the nineteenth century, when scarcely a year went by without the discovery of the cause of still another disease of mankind. Then, as now, the richness of the vein attracted an army of workers whose polemics enlivened and often cluttered the scientific literature of that day. But from that literature the dross has been refined, and the pure gold of the Pasteurs and the Kochs has built the solid edifice of modern bacteriology.

This analogy is important, I think, because the skeptics who laughed at Pasteur and Koch have their counterparts today. And while their skepticism may be well founded in many instances, it must never be forgotten that Funk, McCollum, Sherman, and many others have built as solid a foundation for the science of nutrition as did Pasteur and Koch for bacteriology, one which cannot be disturbed by even the flood of contradictory and sometimes ridiculous literature which confronts us now.

None of us would deny the role of bad nutrition in the pathogenesis of scurvy, of hunger edema, or of beri-beri. We might disagree regarding the details of the anti-pellagra factor, but none would deny that it is to be found in food. The field of controversy and confusion in nutrition is not here, but rather in what Minot[1] has called "the twilight zone of vitamin deficiency." It is not surprising that this should be so, because the most fundamental questions in this "twilight zone" are still incompletely answered, if at all. For example, even the incidence of marginal deficiency is still a matter of dispute, while the effects of such marginal deficiency are even more obscure.

I submit, however, that if one admits the existence of such frank deficiency states as scurvy and pellagra, then he must also admit the existence, in still larger numbers, of less frank or marginal deficiencies. The fact that we cannot be precise about such subclinical states is not the fault of the vitamins, but of our own present lack of knowledge.

Many of us have become skeptical of the importance of accessory food factors because of our failure to find evidences of any considerable degree of clinical deficiency in our own practices, at least not at all approaching the 40 per cent incidence with which defective diet is supposed to exist in the general population.[2] But I submit again that marginal vitamin deficiency may well be today as mild anemia was before the hemoglobinometer, as allergic disease was before the skin test, or as incipient tuberculosis before the x-ray. There is a limit to the diagnostic power of unaided clinical acumen, and who knows how many obscure syndromes may yield to us when simple, clinical tests for vitamin deficiency are available?

But what of the present? Shall we simply wait for the chemist and the research worker to solve these problems for us? I think we would be betraying our own traditions if we did. And we do not have to. For each of us, no matter how meager his laboratory equipment, has a tool with

From the Department of Preventive Medicine and Public Health and the Students' Health Service, University of Minnesota. Read in the Symposium on Nutrition before the annual meeting of the Minnesota State Medical Association, Duluth, Minnesota, June 30, 1942.

which to deal with these conditions. It is a very simple tool, but one which is too seldom used.

It has been called "diet analysis." To me that is a bad term, because it connotes academic tables of grams and milligrams of this or that, which are entirely unnecessary for our purposes. I prefer to call it simply a "diet history." It can be taken in two or three minutes, and with a little practice, the patient's nutritional status can be evaluated with surprising exactness, barring gross gastro-intestinal disease which may interfere with absorption.

TABLE I. AMERICAN BIG CITY DIET

Food	Amount	Calories	Grams Protein	Grams Calcium	Vitamins			
					A	B	C	D
Potatoes	1 lb.	380	8	0.05	+	+	0	+
Flour, white	1 lb.	1600	50	0.10	0	0	0	0
Meat	½ lb.	350	45	0	0	++	0	0
Sugar	¼ lb.	450	0	0	0	0	0	0
Fat	⅛ lb.	500	0	0	0	0	0	0
Totals		3280	103	0.2	+	++	+	0
Requirements		3000	60	1.0	+++	+++	+++	+++

After Newburgh[3]

This diet history can be obtained by asking only six questions. The first of these is:

1. *How much milk do you drink a day?*

In general, replies to this question will fall into one of three groups: (a) those who only occasionally or never drink milk; (b) those who drink one or two glasses per day; and (c) those who average two or more glasses per day. If our patient is in the third group we can immediately assume the adequate intake of calcium, and probably of riboflavin as well. Those in the second group we must reserve judgment on until further questioning, while those in the first group are to be looked upon with a considerable degree of suspicion. In most instances, the nonmilk-drinkers are very apt to have a distorted dietary pattern, certainly low in calcium, frequently in riboflavin, and often in vitamin A, nicotinic acid, and protein.

2. *How often do you eat meat?*

This is an extremely important question because of the frequency with which a decision in regard to the patient's nutritional status may be made almost on it alone. In general, there are again three categories of replies: (a) those who frankly confess that they dislike meat and eat it only rarely—"once a week" is a common answer in this group; (b) those who eat meat almost every day, but usually only once, and then in very small amounts, averaging one-half a normal portion or less; (c) those who eat at least one normal serving of meat each day.

The individuals in group *c* we can again dismiss, especially if they were also in group *c* under question 1, as having an adequate intake of protein, and as having at least a sizable fraction of their normal requirement of thiamine and iron. Those in groups *a* and *b* are again, however, under suspicion. Those in group *a* in particular include a considerable number of our marginal deficiencies, notably in protein, iron, thiamine, riboflavin, and nicotinic acid.

3. *How much cheese, and how many eggs a week do you eat?*

This question is asked largely as a check on questions 1 and 2, since a few individuals because of dietary prejudices may drink little milk and eat little meat and yet have adequate diets because of their increased intake of cheese and eggs. In general, three ounces of cheese are equivalent to one quart of milk, and three to four eggs are equivalent to a normal daily meat intake.

For most individuals, however, the average answer to this question should be, "cheese once or twice a week as a meat substitute, and five to seven eggs a week." Intakes of less than this lead to suspicion of the adequacy of vitamin A and,

taken in conjunction with the previous questions, of protein, iron, and riboflavin as well.

TABLE II. SIMPLIFIED ADEQUATE DIET

Food	Amount	Calories	Grams Protein	Grams Calcium	Vitamins A	B	C	D
Milk	1 qt.	700	33	12	+++	++	0	+++
Cabbage or other green leaves or fruit	1 lb.	100	5	0.2	+++	+++	+++	+++
Bread, whole-wheat	1 lb	1100	40	0.2	+	++	0	0
Potatoes	½ lb.	200	5	0	0	++	++	0
Fats—butter substitutes, lard, vegetable fats	¼ lb.	1100	0	0	0	0	0	0
Totals		3200	83	1.6	+++	+++	+++	+++
Requirements		3000	60	1.0	+++	+++	+++	+++

After Newburgh[3]

TABLE III. WHOLLY ADEQUATE DIET

Food	Amount	Calories	Grams Protein	Grams Calcium	Vitamins A	B	C	D
Milk	1 pt.	350	17	0.6	++	+	0	++
Cream	3 oz.	210	3	0.1	++	+	0	++
Eggs	2	225	20	0.1	+++	+	0	+++
Fruits and green leaves	1 lb.	115	3	0.2	++	+++	+++	++
Flour, bread, cake, pie	1/3 lb.	550	17	0	0	0	0	0
Meat, fish, poultry	½ lb.	350	45	0	0	++	0	0
Potatoes	1/3 lb.	150	3	0	0	++	++	0
Butter	¼ lb.	800	0	0	+++	0	0	+++
Sugar	2 oz.	250	0	0	0	0	0	0
Totals		3000	108	1.0	+++	+++	+++	+++
Requirements		3000	60	1.0	+++	+++	+++	+++

After Newburgh[3]

4. *What percentage of your bread, flour, and cereals, is either dark or enriched?*

It is well known that one of the chief causes for the progressive deterioration of our diets with respect to their thiamine content has been the increasing refinement in the milling of cereal grains. At least 85 per cent of the B vitamins are removed from grain in the process of making white flour. An attempt is being made to correct this by the enrichment of white flour with thiamine, nicotinic acid, and iron, and, beginning July 1, 1942, with riboflavin. It is unfortunately true, however, that only about half of the flour and cereal grain products sold in this country

TABLE IV. MENU ANALYSIS—PIONEER HALL—BOYS

First Week	CAL	CHO (G)	PRO (G)	Fat (G)	CA (G)	P (G)	FE**	VIT. A*	B_1*	C**	D*	G***
Monday	3489	275.15	105.7	218.5	2.208	2.167	15.65	8658	636	88	123	753
Tuesday	3983	371.00	127.0	222.3	2.429	2.858	22.16	11367	576	71	160	952
Wednesday	4283	459.75	126.3	215.51	2.776	2.765	31.115	10984	528	104	126	884
Thursday	3607	312.00	120.6	208.3	2.008	2.337	22.58	8408	817	63	200	890
Friday	4395	525.00	121.4	201.4	2.679	2.879	26.31	10070	625	30	123	1031
Saturday	4004	390.30	139.5	209.4	2.282	2.636	18.08	7993	734	78	132	916
Sunday	4289	455.40	131.3	216.0	2.012	3.211	13.56	5296	722	63	160	782
Daily Average	4007	398.37	124.5	213.1	2.342	2.693	21.35	9968	662	71	146	886
Requirements	3000		70		.8	1.32	12.00	5000	600	75	300	600
Second Week												
Monday	4158	439.4	116.6	214.9	2.460	2.599	22.15	6239	825	156	124	909
Tuesday	4001	386.4	137.4	220.2	2.224	2.617	20.63	8370	570	25	120	927
Wednesday	4811	521.9	140.1	240.3	2.590	2.912	25.13	17018	884	135	151	1362
Thursday	3335	257.3	126.0	200.2	2.383	2.628	17.94	9949	557	65	166	386
Friday	3608	352.94	123.65	189.1	2.287	2.119	15.41	8046	633	79	128	770
Saturday	3729	380.25	125.3	189.7	2.262	2.564	30.11	8137	487	118	126	926
Sunday	3822	309.40	126.9	230.8	2.330	2.373	15.09	9350	662	75	166	1288
Daily Average	3924	378.22	128.0	213.2	2.362	2.463	20.92	9587	659	93	140	938
Requirements	3000		70		.8	1.32	12.00	5000	600	75	300	600
Two-Week Average	3966	388.30	126.3	213.2	2.352	2.578	21.14	9778	661	82	143	912

*International units **Milligrams ***Riboflavin—Sherman-Bourquin units

Boehrer[1]

are at present so enriched. It follows, therefore, that question number 4 has a dual purpose. In the first place, the very asking of the question serves to publicize and to increase the demand for enriched cereal grain products, without which the public-spirited miller operate at a distinct disadvantage with his less social-minded brethren. Secondly, the patient who states that at least half of his intake of these products is either dark or enriched may almost surely be assumed to have at least the minimal intake of thiamine. With less than this, especially in conjunction with a diminished intake of milk and meat, deficiency in this important vitamin may be presumed, and the adequacy of nicotinic acid and riboflavin questioned.

5. *How many servings of fruit and vegetables do you eat each day?*

In general, the optimal intake of these important food sources may be considered as two servings of fruit and four servings of vegetables each day. Attempts are often made to subdivide these into individual requirements of citrus as against other fruits, of legumes, leafy, and yellow vegetables, but for our purposes I think it is safe to assume that given two servings of fruit and four vegetables each day that natural selection will usually take care of the correct distribution.

The fruits and vegetables are chiefly important, of course, as our richest source of vitamin C, and the rather frequent dietary histories of only occasional fruit and one vegetable per day are presumptive evidence of vitamin C deficiency. In addition, the fruits and vegetables are important as supplementary sources for almost every other mineral and vitamin. This is particularly true of vitamin A, the vitamins of the B complex, protein, calcium, and iron. Diets inade-

TABLE V. MENU ANALYSIS—COMSTOCK HALL—GIRLS

First Week	CAL	CHO (G)	PRO (G)	FAT (G)	CA (G)	P (G)	FE**	VIT. A*	B_1*	C**	D*	G***
Monday	2880	279.1	84.7	158.7	1.279	1.620	26.56	3948	788	89	68	705
Tuesday	2891	294.1	77.2	155.2	1.328	1.490	14.13	7600	544	68	90	497
Wednesday	2714	236.8	76.5	132.0	1.452	1.700	26.32	4532	543	72	31	494
Thursday	3395	317.5	97.1	191.8	1.250	1.821	16.94	5542	407	62	100	417
Friday	2529	266.7	64.5	132.4	1.215	1.262	11.95	4952	351	82	281	427
Saturday	2863	323.6	74.0	148.7	1.301	1.497	11.14	6936	378	90	140	631
Sunday	2824	283.9	79.3	151.6	1.326	1.723	14.75	5647	428	67	138	530
Daily Average	2866	285.9	79.0	152.9	1.307	1.587	17.39	5593	491	75	121	528
Requirements	2500		60		.8	1.32	12.00	5000	500	70	300	600
Second Week												
Monday	2657	291.1	88.1	141.3	1.207	1.752	18.11	6084	310	43	106	568
Tuesday	3306	350.6	86.8	172.9	1.404	1.688	14.33	11433	886	78	106	589
Wednesday	3436	311.5	92.1	119.2	1.215	1.555	17.96	16065	508	110	110	1373
Thursday	2559	271.0	81.9	128.45	1.203	1.477	13.82	10066	417	99	100	570
Friday	3220	368.9	81.5	157.1	1.538	1.710	13.31	5173	380	90	71	533
Saturday	2525	222.9	92.7	135.8	1.198	1.560	14.37	5626	406	100	106	692
Daily Average	2950	302.6	73.5	142.4	1.294	1.623	15.31	9074	484	86	99	720
Requirements	2500		60		.8	1.32	12.00	5000	500	70	300	600
Thirteen-Day Average	2908	294.3	76.3	147.7	1.301	1.605	16.35	7334	488	81	110	624

*International units **Milligrams ***Riboflavin—Sherman-Bourquin units

Boehrer[1]

quate in these foods inevitably mean border-line diets at least, and when combined with other inadequacies are pathognomonic of vitamin deficiency.

6. *How much butter do you eat each day?*

It has long been realized of course that butter is one of our richest sources of Vitamin A. The work of Burr and his collaborators,[3] however, has emphasized that butter and other natural fats are essential not only because of their vitamin content, but because they are our source of linolenic and other unsaturated fatty acids which are apparently as essential to our life and well-being as any vitamin. It is realized of course that in certain areas of the country not as fortunate as Minnesota, other fats may have to serve as butter-substitutes, but in this region we may well look upon butter intake as a fairly accurate index of fat consumption. For our purposes we may consider a daily consumption of six squares of butter as an index of an adequate fat intake. Less than this, unless it is compensated for by unusually large intakes of cream, cheese, meat, and eggs, indicates a borderline daily ration of vitamin A and fat.

Some of you may object at this point that such a dietary pattern as I have described is the normal pattern for our people, and that departures from it are so rare that the routine taking of such a dietary history would be a waste of time. I can assure you that such is not the case. The causes for such deviations include not only poverty, but ignorance and faddism.

Newburgh, for example, has tabulated the average large-city diet in the lower classes as shown in Table I.

Contrast this with the dietary pattern of a minimum-cost adequate diet (Table II).

Or in terms of a diet of somewhat greater cost (Table III).

resenting at least 25 per cent of our student population, not a single student was found to

TABLE VI. EXTENT OF DIETARY DEFICIENCY
Per Cent of Diets Adequate in Each Dietary Factor

	Calories	Protein	Calcium	Iron	A	B_1	C	G
Low Income—Boys	31.8	84.8	86.4	75.8	68.2	12.1	18.2	19.7
Low Income—Girls	36.4	68.2	68.2	36.4	40.9	13.6	18.2	4.5

Boehrer[1]

TABLE VII. AVERAGE DIETS—ALL GROUPS

	Calories	Protein	Calcium	Iron	A*	B_1*	C**	G***
Low Income—Boys	2823	72.7	1.178	14.65	6395	464	58	508
Pioneer Hall	3966	126.3	2.352	21.14	9778	661	82	912
Low Income—Girls	2247	67.5	.881	11.40	4960	351	55	371
Comstock Hall	2908	76.3	1.301	16.35	7334	488	81	624

*International units **Milligrams ***Riboflavin—Sherman-Bourquin units.

Boehrer[1]

TABLE VIII. DIETARY PATTERNS OF DORMITORY AND EXPERIMENTAL GROUPS

	Milk	Cheese	Eggs	Meat	Vegetables	Fruit	Per Cent Dark Grains
Dormitory	6 glasses	.44 oz.	.6	1.84 serv.	4 serv.	2.8 serv.	50%
Exp. Group	2 1/3 glasses	.15 oz.	.2	1.5 serv.	2.6 serv.	1.4 serv.	25%

These dietary patterns, while exaggerated, are nevertheless indicative of the wide range of diets habitually eaten by great numbers of our population.

Furthermore, it is an error to believe that such diets are only eaten by the lowest strata of our society. During the past year, for example, we have been greatly interested in examining the nutritional status of our student population at the University of Minnesota. Our first step was to analyze the diets provided for the students housed in our dormitories, representing 7 per cent of our student population, and economically somewhat above the average. These were found to be excellent diets, considerably above the nutritional standards.

When we analyzed the diets of another group of students, however, an entirely different picture was found. In this group of 88 students, rep-

have a completely adequate diet, and 11 per cent of them had diets inadequate in each of the eight factors studied. The details of these studies have been published elsewhere.[1]

In addition to these detailed analyses, we also carried out studies of these diets along the lines which I have described to you. The results of these may be tabulated as shown in Table VIII.

The reflection of their detailed dietary inadequacy in terms of the simple history is clearly seen.

It might properly be asked on what basis we assume that such diets as found in our experimental group are truly inadequate, in the sense of a resulting diminution in health and vigor. This question of course goes to the root of much of the controversy in the whole field of nutrition, and is the problem which we are attempting to solve in part in our studies at the University of

Minnesota. Our findings in this respect are thus far incomplete. I can say, however, that 20 per cent of this group have diminished capillary integrity, as measured by the cuff test, and that 35 per cent of them show an abnormal degree of vascularization of the cornea as seen with the slit lamp. Thus even with these relatively crude tests, definite physical abnormality was demonstrable.

In conclusion, I should like to reiterate my plea for your tolerance of the often groping efforts of the fundamental workers in this field. If we can on the one hand be critical of the extravagant claims of those whose chief interest in the vitamins is commercial exploitation, and if on the other we will conscientiously search for evidences of dietary deficiency in our patients, in our physical examinations and especially in our histories, we will be doing not only them but the science of nutrition an inestimable service.

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FOOD PREPARATION AND PRESERVATION

EVA DONELSON

University of Minnesota

Minneapolis, Minnesota

A NEW ENGLAND woman years ago refuted suggestions for the improvement of her diet by saying, "I'd ruther eat what I'd ruther." Today we say the same thing and furthermore we practice it.

The challenge then is to "ruther" eat those foods which, in so far as we know, today, are recommended to be included in a good diet. One of the battles to be fought at this juncture is that of preparing those good foods by methods such that they continue to be good foods even though exposed to the vicissitudes of the pot and the pan.

Are there any pertinent suggestions as to methods of food preparation that will help to conserve the original food value as well as produce a palatable product?

In the preparation of the food for cooking a precaution is issued, relative to the use of the green, outer leaves of a food such as cabbage. The extreme outer leaves are always the most green, as for example in cabbage, and consequently good in food value, but in addition if an excess of spray, usually arsenic or lead, happens to have remained there, the consumer gets more than a bargain, ironically speaking, for he not only gets vitamin A, calcium and iron, characteristic of green vegetables, but also unfortunately arsenic and lead. So the wiser practice would seem to be to discard those few outer leaves on vegetables.

Sometimes less preparation and manipulation than more contributes to the food value. For example, saüerkraut that is stored in the jars or vats in which the fermentation took place is found to be higher in vitamin C content than that which has been disturbed to the extent of canning it after fermentation in fruit jars, a common practice. That manipulation furthers the loss of carbon dioxide which contributes to the loss of the vitamin. It should be noted that sauerkraut immediately after fermentation is almost as good a source of vitamin C as the original cabbage. During storage there is a gradual loss of this vitamin; and as indicated the rate of this loss increases if the product is repacked.

Another example is the merit of using the whole potato, peeling and all. Potatoes not peeled lose less of the nutritive elements on cooking than the peeled ones and since with the skins on they are higher in food value to begin with, the combination of less loss from a food higher in food value, indicates that whenever feasible potatoes "in the jackets" should be on the menu. The flavor too is different.

It is better not to strain the orange juice for

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breakfast. The pulp that is removed and subsequently thrown away is higher in food value than the juice that is retained.

Nature seems always to be with the housewife. The more simple she makes her food preparation operations, the better table she may set from the health standpoint, within limits. For there is at the other extreme, the person on a marginal allowance who limits the food supply for the family by purchasing from the delicatessen and her operations consist of wielding the can opener, for the fruits and vegetables, and the butcher knife to slice the prepared meat and bread. To stretch the budget, home preparation of foods is of signal importance. With food prices up 20 per cent (as of March, 1942) a vigilant eye must always be open for procuring the dollar's worth of food value. Furthermore and in addition to the economy factor, to spare those foods on the grocer's shelf which are well preserved, is our patriotic duty. It should be the aim of all food purchasers to use to their fullest capacity those fresh foods in season and especially those foods grown in the locality of their residence. Help yourself by using them in your meals, for fresh foods taste better than those preserved in any way; help the grower who has increased production in compliance with the request for increased production; help our allies by sparing the canned and dried products that can be shipped; help free transportation facilities by using products grown in your locality.

For the preparation of foods, some hints have been summarized by the Bureau of Home Economics:

1. Don't use soda in cooking green vegetables. Why not? It destroys thiamine and ascorbic acid. What difference does that make? It is difficult to attain the thiamine level in the dietary recommended by the National Research Council unless every opportunity is taken to conserve that factor. Vitamin C is the least stable nutrient in the dietary. Production figures indicate that not enough citrus fruits and tomatoes were grown last year to supply the needs of the population of this country. Now with wartime needs superimposed, it is clearly evident that supplementary sources must be called upon and one of the good ones is green vegetables.

2. In boiling vegetables, return the temperature to the boiling point as rapidly as possible after the addition of the food. That too is for the purpose of conserving vitamin C. There is in vegetables oxidative enzymes which facilitate the loss of this vitamin. High temperature will destroy the enzyme; the more quickly this can be done the smaller the loss of this vitamin.

3. Use as little water as possible in boiling foods. That procedure conserves water soluble elements, minerals and vitamins. A recent piece of work from Cornell University, in New York State, demonstrates that fact clearly for vitamin C. In a previous study they boiled peas using approximately 1 cup of water to 1 cup of peas and the peas retained 59 per cent of the original vitamin C value; in the present study the measure of peas to water was approximately 3 to 1—that is much less water. The peas retained 75 per cent of the original amount—a notable difference. Whether the container was covered or not made no difference in this loss in this carefully done study.

4. Save the water in which vegetables have been cooked. Use it in gravies, sauces and soups. If the precept of using less water is followed there will be very little vegetable water to use and the flavor of the food is excellent. Steaming saves the nutrients and results is a palatable product.

5. Prepare chopped fruit and vegetable salads shortly before serving. Chopping non-acid vegetables releases those oxidative enzymes previously mentioned which allow for the destruction of ascorbic acid. Shredded cabbage, it was found by investigators at the University of Montana, loses from 15 to 40 per cent of its vitamin C content when allowed to stand for one hour at room temperature. Broccoli loses 35 per cent standing three days at room temperature. Spinach, not chopped, loses practically 100 per cent of the vitamin C when stored at room temperature for one week. Refrigeration checks that rate of loss. This same loss is not manifested in acid foods. In fact orange juice shows no loss from standing overnight in the refrigerator and little loss at room temperature.

6. Start cooking frozen foods while still frozen. All cooking times are shortened for frozen foods.

7. Serve raw frozen foods immediately after thawing. The process of freezing does not destroy the bacteria but merely delays their activity. With the cells of food material broken by the freezing the medium for their activity is rich and they take advantage of it. Spoilage ensues quickly.

8. For meats slow cooking is most satisfactory.

9. For baking, the recommended modifications of the usual recipes for the use of sweetening agents other than sugar result in most acceptable products. They are:

Honey: Replace sugar with honey cup for cup, but use one-half the other liquid called for. That is, if the original recipe calls for 1 cup sugar and 1 cup milk, use ½ cup honey and ½ cup milk. Other ingredients remain the same. Lower the baking temperature, keeping the oven moderate. Mixtures made with honey not only brown very easily, but high temperatures tend to change the flavor of the honey.

Corn, Cane or Maple Syrups: Replace sugar with syrup, measure for measure and reduce liquid only one-third. Cookies made with corn and cane syrup are not as sweet as sugar cookies.

Sorghum syrup: Follow the same rule as with the other syrups, but reduce the baking powder called for in the original recipe. Use ½ teaspoon of soda for

every cup of sorghum. This quantity of soda and sorghum has the leavening power equal to two teaspoons of baking powder.

Molasses is high in calcium and iron content; a valuable asset to the diet. We have much to learn from our neighbors to the south. They like it; so should we.

Food Preservation

That no foods be wasted from garden patches, berry bushes or fruit trees this year, preservation is the solution. The same holds true for meat at the time of butchering. We will eat what we can while fresh; we will preserve or store the remainder. A commendable activity of which I recently heard is that of the Federated Women's Club in the 5th district. They plan to obtain from farmers fruit and vegetable crops that they are unable to sell at the time and which would mean spoilage and to can these products and hold them in reserve for distribution during the year through established agencies where a need exists.

In general the possible methods for preserving foods are by canning, freezing, drying and storage. Certain techniques and precautions are necessary for the attainment of a satisfactory product by any of the methods. Through the Superintendent of Documents in Washington, D. C., bulletins can be obtained as follows:

Community Food Preservation Centers. Miscellaneous Publ. No. 472, U. S. Dept. Agriculture, Washington, D. C. 10 cents.

Home Canning of Fruits, Vegetables and Meats. Farmers' Bull. No. 1762, U. S. Dept. Agriculture. 10 cents.

Farm and Home Drying of Fruits and Vegetables. Farmers' Bull. No. 984. 5 cents.

Ways to Save Sugar When You "Put Up" Fruit. Bureau of Home Economics, U. S. Dept of Agriculture.

Consult your local county agent about the following prepared and distributed through the Agricultural Extension Division at the University Farm, Saint Paul:

Using Less Sugar for Canning, Preserving and Freezing Fruits. Extension Pamphlet 100.

Preserve Garden Products by Drying, Waxing and Brining. Extension Pamphlet 102.

Home Canning Fruits and Vegetables. Extension Pamphlet 100.

Preparation of Fruits and Vegetables for the Frozen Food Locker. Extension Pamphlet 79.

For Health this Winter Store Vegetables. Extension Pamphlet 101.

The food value of foods preserved and stored according to the methods set forth in the above listed pamphlets is not to be underrated. But in order to be sure that you are alive and well enough to enjoy these benefits, it is recommended that all non-acid vegetables and meats, home canned, be boiled fifteen minutes before tasting, as this removes the danger of botulism. It is also a good rule never to taste raw sausage, a hard precept for good sausage makers to follow, for the danger from trichinosis is vague to them. From earlier discussions it was indicated that vitamin C is the least stable food factor. Those foods on which we depend most for vitamin C, are as rich immediately after canning as the fresh, but there is loss on storage. Tomato juice whether home or commercially canned may be as rich in ascorbic acid as the fresh product. There does seem to be one precaution and that is that the head space in the jar be kept to a minimum. For although the vitamin is preserved in acid, it has been observed that an abnormally large headspace with a consequent inclusion of oxygen results in oxidation of some of this vitamin. Also, if you wish the vitamin C in your tomato juice, you will not boil it down to thicken it, but drink it thin. So closely identified with acidity is vitamin C that when a tomato juice tastes flat due to low acidity it has been found to have a low concentration of the vitamin. In the nonacid vegetables there is loss of both vitamins C and thiamine in canning. Vitamin A is very stable as is G.

Freezing causes no more destruction of vitamin C in vegetables if the product is blanched before freezing, than does the ordinary cooking process. The fresh cooked and frozen cooked peas for example are equal in vitamin C value. Other food factors have not been studied so extensively.

Interest, perforce, in dried and dehydrated fruits and vegetables has been increasing. The difference between drying and dehydrating is that the latter method entails controlled conditions of temperature, humidity and air velocity, the former only semi- or uncontrolled conditions. An advance over the earlier procedures used for drying is the recognition that as with freezing, for most vegetables, blanching before drying is necessary to retain not only the more nearly natural flavor but also the food value. Tressler indicates in his thorough review of the literature on the nutritive value of dried foods,

done for the National Research Council, that "vegetables retain their vitamin C well if stored in the absence of air." Air-tight cans are recommended by our Extension Divsion for the storage of these products. Tressler continues to state, "It is probable that storage in an inert atmosphere aids also in the retention of carotene. Dehydrated fruits retain vitamins, particularly carotene and vitamin C, much better than those which are sun dried. Sulfuring of fruits aids in the retention of vitamin C but causes the almost complete destruction of the vitamin B_1 content." It was concluded that "the best means of preparing and storing dehydrated vegetables and fruits of high vitamin content are still lacking." It should be mentioned at this point that the Office of the Experiment Station will launch next year into a coöperative study tremendous in scope through the Experiment Stations in the Colleges of Agriculture throughout the country, to study the nutritive value of foods. It is cooperative through Divisions on a given campus such as Horticulture, Dairy, Animal Husbandry and Home Economics as well as between states. They will study the effect of variety, conditions of production, preparation, preservation and storage on the palatability and nutritive value of foods. In a few years, a report similar to the one that I have attempted to present today, will be much more extensive and much more conclusive.

Food is a strategic war material and it must be saved. It must be prepared so that not only are the food nutrients preserved, however, but also so that it is palatable. So when foods are in season, use as much as possible in the fresh state; preserve them by some method such as canning, drying, freezing or storage. That is the responsibility of every person charged with the feeding of a family or group. No foods can be wasted in garden patches, on berry bushes or fruit trees this year. Commercially preserved foods must be spared for lease-lend and the army; the home larder should be filled by the homemaker. The civilians too need more food than duirng pre-war days because more persons are engaged in active work. To provide food for the Allied Nations, farmers have stepped up their production; consumers can march with them by curtailing the waste of all food, by careful preparation and increased preservation.

THE EARLY TREATMENT OF INJURIES TO THE FACE AND NECK

GORDON B. NEW, M.D.

Rochester, Minnesota

THE early treatment of injuries to the face and neck involves (1) first aid, (2) the transportation problem, (3) the treatment at the hospital or if in service at the advanced clearing station, and (4) the treatment at the base or general hospital.

First Aid

First aid in the care of injuries of the face and neck consists of the control of pain, hemorrhage and pharyngeal obstruction.[1] Bleeding may be caused by injury to a vessel about the face or jaws. One of two methods can be employed in its control: (1) the use of external pressure on the carotid artery in the neck, on the facial artery over the margin of the jaw, or on the superficial temporal artery in front of the ear; (2) packing of the wound. It may be necessary to use the blunt end of a stick to separate the teeth in order to open the mouth for examination of the bleeding point. If packing is employed, gauze or a handkerchief can be used. If the bleeding is from the jaw and is severe, it may be necessary to bind the jaws together with a scarf or a bandage looped over the head and beneath the chin in order to exert enough pressure on the packing to control the bleeding.

Pharyngeal or laryngeal obstruction may be caused by blood running back into the pharynx and collecting in clots, or by the tongue falling

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back against the posterior pharyngeal wall—the latter being the result of a bilateral fracture of the lower jaw. The clots can be removed with the index finger in order to clear the pharynx. Lowering the patient's head or holding the head forward so that blood will drain out of the mouth is preferable to allowing it to run into the pharynx or larynx. The tongue can be pulled forward with the finger and thumb in order to relieve pharyngeal obstruction and it may be necessary to hold the tongue in this position until other suitable measures are available. If a silk suture on a needle is available, this can be passed through the anterior part of the tongue in the midline and stuck to the chin and neck with adhesive plaster, thus holding the tongue in protrusion.

If the lower jaw is fractured, a scarf or a large handkerchief tied over the top of the head and beneath the chin will hold the fragments of the jaw in position against the upper teeth and relieve the pain. The mouth and the pharynx should be examined carefully for the presence of any loose teeth, in order that they may be prevented from falling into the larynx or lung.

Blood or any gross dirt of the road can be removed from the soft tissues of the face with water, to permit more careful inspection.

Loose flaps of skin about the face should be set back as nearly as possible in their normal position. This is particularly true if there is any angulation of the pedicle of a flap. Adhesive plaster is a great aid in holding the flaps or margins of the wound together. Search should be made for any large pieces of skin that may have been cut off or torn away, as it is possible that these may be employed later to cover the raw surfaces. If a part of the nose or ear has been cut off it should be saved, no matter how dirty it is, as it may be possible to clean it, suture it in place and apply pressure by means of a dressing, or at least the cartilage may be utilized later in reconstruction if it is preserved in an ice box.

In wounds of the neck, gauze packing and pressure dressings to control bleeding may be necessary. Crystals of sulfanilamide may be placed directly in the wounds in either the neck or the face.

In the first-aid treatment of burns, the Conference on Burns of the National Research Council has given the following directions:

First-aid Therapy.—The hands and face are to be covered with an aqueous emulsion containing 5 per cent of sulfadiazine, or, if this is not available, with boric ointment. These surfaces are then to be covered if possible with a fine mesh gauze (44) and a firm pressure bandage using cotton waste should be applied to the hands. No bandages should be applied to the face.

The eyes, if treatment is necessary, should have a single instillation of ophthalmic ointment containing 2 per cent of butyn sulfate. The patient must be warned not to rub his eyes once this anesthetic agent has been applied; otherwise the cornea may be severely injured.

The Transportation Problem

It has been well said that a live patient in a ditch or in a nearby farmhouse is better than a dead one that has been transported to a hospital. In other words, an injured patient has a much better chance of recovery if he is taken care of as near the accident as possible than if he undergoes a long trip to a hospital. The transportation problem of those injured about the face and neck involves supporting the lower jaw and preventing respiratory obstruction while the patient is being transported. A suture into the tongue or a rubber anesthetic tube inserted into the nose and carried into the hypopharynx holds the tongue forward and gives a free airway. The patient should sit up with the head forward so that any blood will run out of the mouth. If he cannot do this, he should lie on his stomach. If the patient has an injury to the jaw or pharynx and there is any bleeding, the pharynx and the trachea may become obstructed because of blood running into them.

Advanced Hospital or Clearing Station

Shock should be treated as soon as possible by stimulation and heat and the use of blood plasma.

Further cleansing of the wounds may be done, and hemorrhage controlled by ligation of vessels if necessary. Débridement is carried out and careful suturing of the wounds of the face or neck may be attempted. This should not be done, however, unless there is good illumination and unless fine needles and suture material are available. Large needles and heavy suture material frequently produce much scarring that is almost impossible to take care of later. It is much better to hold the flaps or margins of the wound together with adhesive plaster until accurate ap-

proximation of the edges of the wound can be made in the hospital where the necessary equipment is present.

At times, it is best to delay repair of facial injuries because of the serious condition of the patient. This may be due to fractures in the frontal region or of the base of the nose extending into the ethmoid region, or to an injury in some other part of the body, such as an extremity, the thorax or the abdomen. Sulfathiazole is placed directly in the wound and given internally in cases in which there is injury of the ethmoid region and frontal region, and the patient is observed for a time, sometimes without closure of the wound. In general, however, the sooner the soft tissues are sutured, the better the result.

Satisfactory results are obtained in the immediate care of the soft tissues of the face when the treatment consists of proper débridement, excision of the ragged and lacerated margins of the skin, complete hemostasis, adequate drainage, use of a minimal amount of fine catgut, approximation of the margins of the wound with fine silk sutures placed close to the edges and the application of a pressure dressing to prevent hematoma and hold the flaps in position. The use of granulated sulfanilamide or sulfathiazole placed directly in infected wounds is one of the great advances in the care of facial injuries.

If the injury is severe, fractures should always be excluded by roentgenologic examination. Care of bony defects may be delayed until the swelling of the soft tissues has become reduced. Free drainage for all wounds of the jaw or floor of the mouth is essential in order to prevent a phlegmon in the neck. This is best done by nicking the skin and mucosa, carrying curved forceps through from the neck into the floor of the mouth or outside the lower jaw and passing a Penrose drain through this channel, making through-and-through drainage. The ends of the drains may be fixed with silk at the corner of the mouth. A dentist is of great aid in the use of wires and splints to fix the fractures of the upper and lower jaw and should be part of every team caring for injuries of the face and neck.

Definitive Treatment of Burns.—Dressings are to be removed and first the surfaces of the burn and then the surrounding skin cleansed with soap and water, using pledgets of cotton and nothing else. Do not scrub the burned surface.

After cleansing, rinse the surface freely with physiologic salt solution. Open the blisters and remove all necrotic epidermis under the best possible aseptic precautions and minimal trauma. The aqueous emulsion containing 5 per cent of sulfadiazine or boric ointment is then to be generously applied to the burned area and covered with fine mesh gauze. The pressure dressing on the hands should then be reapplied, but the face should not be covered. The dressing should be changed only when necessary.

In third degree burns, at the time of redressing, crystalline sulfanilamide should be applied. As soon as the granulating surface is reasonably clean, skin grafting should be performed.

Base or General Hospital

While the care of the soft tissues of the face and neck should be seen to as soon as possible, there need be no hurry about the care of the bony structures of the face. Sometimes it is best to delay several days until the swelling has become reduced considerably before one attempts to put the bones into correct position and to have the dentist wire the teeth together to fix them in their correct alignment. The repair and restoration of the lost tissue by means of grafts, flaps and other plastic procedures should be carried out. In general, it is best to delay the final plastic work for about six months and allow the scarring and thickening to go down as much as they will after as much as possible has been done at the time of the primary care.

Following injury about the neck, if there is some trauma to the larynx and pharynx, edema may develop and this may necessitate tracheotomy. If examination shows some laryngeal obstruction which is progressive, tracheotomy should be performed early. If one waits until there is definite laryngeal obstruction or still longer, until there is marked laryngeal obstruction, then changes occur in the trachea and lung which are usually followed by pneumonia. Early tracheotomy involves very little risk. It is best done by dividing the isthmus of the thyroid and placing the tracheal tube about the second tracheal ring. If stricture in the larynx or trachea follows an injury and necrosis of the cartilage, a skin graft may be used later to make a new airway, so that the tracheotomy tube can be dispensed with. It is usually best to wait six months before one attempts this type of plastic operation.

If bleeding necessitates ligation of the external carotid artery, one should do this as early as possible rather than wait until the patient has had a great deal of bleeding. The incision in the neck should be a curved one, following one of the wrinkles in the neck, extending from just above the thyroid cartilage to below the angle of the jaw. The skin, superficial fascia and platysma muscle are freed up and the upper flap is retracted by means of ligation retractors. The anterior margin of the sternomastoid muscle is exposed and when this is turned back, the jugular vein and carotid artery may be exposed by blunt dissection using a small hemostat. The branches of the external carotid artery should be demonstrated before one carries the silk suture about it. The pulse of the facial or temporal arteries should be tested out before the suture is tied.

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PAIN AS A SYMPTOM IN APPENDICITIS

R. A. GLABE, M.D.

Plainview, Minnesota

GENERALLY we speak of generalized and localized types of pain in acute appendicitis. In the presence of an acute condition of the abdomen with generalized pain in which we suspect acute appendicitis, we are altogether too wont to assume the attitude of *laissez faire* and await the development of localized pain at McBurney's point, and arrive later at a diagnosis difficult to miss. A finer understanding of the mechanisms causing pain might well be reviewed to refresh our knowledge and make for quicker, surer diagnoses of acute appendicitis.

Pain varies in appendicitis because the source of stimulation varies. The initial generalized pain arises from the appendix itself due to distention of the organ and the later localized pain arises from stimulation of the parietal peritoneum by the spreading inflammatory process. Ordinary forms of stimulation such as touch, temperature (except in extremes) and chemicals cause no sensation in the alimentary canal from the middle or lower third of the esophagus to the upper end of the anal canal. Distention of the viscus is the stimulus which produces this visceral pain which arises as a result of the stretch stimulus applied to the nerve terminals in the wall. This pain is only roughly localized to the viscus itself or is referred (Hurst).

A brief review of the neuroanatomy might be in order. The tenth thoracic to probably the first lumbar spinal segment are generally accepted as being the primary receptive center for the appendix. These visceral autonomic afferent fibers form a part of the splanchnic nerves of the sympathetic nervous system supplying the viscera only and not the parietal peritoneum, abdominal muscles, or skin. The appendix has a bilateral splanchnic supply. The peritoneum, having an entirely different innervation, has a somatic body supply, is segmental and corresponds with the muscle and skin.

Sheehan, studying the nerves of the mesentery, found three types of fibers.

1. Afferent sympathetic fibers traveling in the splanchnic nerves ending in the Pacinian corpuscles scattered throughout the mesentery.

2. Free nonmyelinated afferent and efferent sympathetic fibers terminating in the serous covering of the bowel and providing for the transmission of true visceral pain.

3. Free myelinated fibers probably derived from somatic nerves, but probably not extending in the mesentery as far as the serous covering of the bowl itself.

The parietal peritoneum is therefore sensitive to cutting and tearing while the viscus itself containing only autonomic afferent nerve fibers is insensitive to stimuli of these types.

Considering referred pain it will be remembered that a given spinal segment supplies a visceral area with autonomic nerve fibers and a well-delineated area of skin, muscle and peritoneum with somatic nerves. Though closely

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linked in the spinal cord, the two types of structures may be some distance apart due to embryological development and rotation.

Concerning the visceral pain, evidence seems to show that contraction of the muscular wall of a hollow viscus does not of itself give rise to pain. Rather pain arises if the contraction causes distention of a neighboring portion of the wall, which might be the case if part of the wall is in spasm or a mechanical obstruction exists. Poulton found a peristaltic wave approaching a balloon inserted into the lower part of the human esophagus caused pain while during its passage over the esophageal wall in contact with the balloon this sensation did not exist. He ascribes the absence of pain during the passage of the contraction wave to the reduction in the diameter of the tube and the subsequent release from stretch of the nerve endings lying between the muscle fibers. Pain also ceased if the esophageal muscle relaxed to accommodate the balloon, adjusting the length of its fibers to the distending force.

Wangensteen and his co-workers in studying the etiology of acute appendicitis noted that the ingestion of food appeared to raise the basal level of pressure and increased the amplitude and frequency of the waves of contraction of the appendix.

They also noticed that a rupture of a rabbit's appendix was hurried considerably by the intravenous infusion of hypertonic saline solution or the oral administration of croton oil, probably largely an effect of fluid secretion—the muscle contraction being less responsible than the dilating force of the secreted fluid. It appeared to them that the interference with the blood flow resulting from maintained intraluminal pressure exceeding the capillary pressure brought about the necrosis of the wall at a lower intraluminal pressure than a normal organ.

Birdshot placed in an appendicostomy stoma caused one of their patients to suffer cramps as the shot progressed toward the cecum. The cramps ceased after the shot had passed the appendical sphincter at the cecum. Distention of the human appendix by the injection of fluid through an appendicostomy opening caused severe pain referred to the region of the umbilicus.

The preceding anatomical and experimental data give us a basis for the logical explanation of appendical pains. At the onset of the disease there is nearly always some luminal obstruction due to an overactive sphincter, fecalith, fecal matter, or anatomically narrow lumen of unknown cause, and the organ is caused to swell due to normal secretions of epithelial cells as well as inflammatory exudate. The muscle fibers are put on the stretch, causing the visceral type of pain—diffuse, boring without accurate localization, perhaps roughly localized in the region of the umbilicus or left upper quadrant, no elevation of temperature, no hyperesthesia, spasm or rigidity. This is true visceral viscus pain. As this process progresses the peritoneal serous covering and parietal peritoneum become inflamed and with it develop localization of the pain, hyperesthesia of the skin, reflex rigidity of the muscles and systemic signs such as fever and leukocytosis. The peritoneum is involved and any movement—walking, coughing, or deep respiration—brings about tenderness and reflex spasm of the muscles to pressure. Pain and tenderness resulting from pressure upon the inflamed appendix is localized, probably because the infected roughened organ comes in contact with the parietal peritoneum (Morley). Relief from pain of a ruptured appendix is brought about by the release of the stretch reflex, and the continued rigidity is explained by the continuous parietal stimulation of the somatic nerves by the appendical and peritoneal exudate.

Initial attacks of acute appendicitis of a typically situated appendix are easier to diagnose. Difficulties arise when the appendix is retrocolic, retrocecal or especially retroperitoneal. The retroperitoneal case presents more possibilities of complications, because the sensitive peritoneum is not so readily stimulated. The second or somatic localizing pain may be entirely absent and the physician may operate depending on the physical finding of tenderness and rigidity in the right lumbar region. Another cause for difficulty exists in the acute excerbation of an appendix with previous attacks and surrounded by bands of scar tissue, which is not so readily stimulated as the normal peritoneum. In these cases like those of more unusual position, the expected tenderness, skin hyperesthesia, reflex spasm or rigidity may not be so much in evidence and the gravity of the case is greater than the physical signs would indicate. It is in such cases more than others that the leukocyte count, fever, and pulse are of greatest import. I do not believe

the importance of a rectal or bimanual examination can be overestimated. Especially in the deeper situated positions, the examining finger may come closer to the affected organ by rectum than through the abdominal wall, and a greater stimulus therefore applied to the affected organ will bring it in contact with a more sensitive peritoneum. An exception to this would be a highly situated vermiform process which the finger cannot reach upon rectal examination.

Summary and Conclusions

1. Two nerve supplies are involved in acute appendicitis, the viscus innervation being from the visceral afferent fibers of the splanchnic nerves of the sympathic nervous system and the peritoneal from the somatic nerves.

2. The stimulation of the visceral afferent nerves is due to distention of the appendix and clinically causes a diffuse, boring type of pain without definite localization, without elevation of temperature, hyperesthesia, spasm or rigidity.

3. The somatic nerves respond to inflammation and localize the disease. With localization of pain we find the elevation of fever, leukocytosis, spasm, rigidity and hyperalgesia.

4. If the appendix is not in contact with normal peritoneum, the localizing pain may not exist.

5. Leukocytosis, fever and probably rectal examination may be of great aid in making a diagnosis in these latter cases.

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THE AMERICAN FERMENT

Speaking at a dinner in honor of Dr. J. Stanley Kenney, president of New York County Medical Society, on May 19, Dr. Nathan Van Etten, past-president of the AMA, said, in part:

"The great melting pot of civilization, which is the United States of America, has often been overheated during the years of Dr. Kenney's experience.

"Modern medicine and the revelations of science have upset empiric traditions, so that he is now engaged in studying new therapies—new methods for restoring the sick to functional usefulness and new ideas to enlist community support in the prevention of disease.

"New social forces have risen to disturb medical evolution by violent explosions which are impatient of normal adjustment. Elements unfriendly to the medical profession have been in power for ten years, upsetting the peaceful progress of a great nation by erecting powerful bureaus, which rule by fascist decree; which do not serve the people, but who command the people to serve them.

"Although the medical profession has voluntarily enlisted fifty thousand of its young doctors in the service of the war emergency, it is reviled for lack of support of the whims of idealists who claim to be interested in new distributions of medical service.

"Mr. McNutt shakes his fist at the physicians of the country in June at Atlantic City, Frances Perkins calls them obstructionists on January 20, and Mrs. Roosevelt gnashes her teeth and tells doctors on the third of May that if they do not voluntarily conform to the wishes of autocracy that they will be compelled to do so.

"No longer are our elected representatives, whose wages are paid by the taxpayer—no longer are they our servants, but they are our masters. No longer does the State serve us, but we slavishly serve the State.

"Let us not forget that this unfortunate situation is the result of fermentation by agitators who have long been working at every social level, and that widening cracks are appearing in the surface and in the foundations of our economic, religious, and social systems which may engulf us.

"Civilization is sick! It needs good doctors. Shall we be equal to the task of doing our part toward preventing complete destruction of what we have been proud to call American Democracy?

"The answer to this question is yes if we shall wake up and work."—*N. Y. State Jour. Med.*, June 15, 1943.

CLINICAL-PATHOLOGICAL CONFERENCE

MINNEAPOLIS GENERAL HOSPITAL

A. J. Hertzog, M.D., and S. V. Lofsness, M.D.
Pathologists

Presentation of a Case

A-43-933

DR. ARTHUR: The case is that of a forty-one-year-old man who was admitted to the Nervous and Mental Service of the Minneapolis General Hospital on April 13, 1943, where he died on May 19, 1943.

He was first admitted to this hospital on January 10, 1943, shortly after an automobile accident. He was unconscious on admission but recovered consciousness in a few minutes. He was lethargic and complained of a severe headache. There was no evidence of a head injury and it was thought that the accident was the result of a spontaneous cerebral accident. The patient stated that he had had hypertension for several years, and that two years previously he had had a stroke. This caused a left hemiplegia which improved over a period of several weeks, but at the time of the accident he still had some weakness of the left arm and leg.

Examination revealed his blood pressure to be 220/160, temperature 99.4, pulse rate 100. The heart seemed to be moderately enlarged and a soft systolic murmur was heard over the apex. His lungs were clear and there were no masses in the abdomen. Neurological examination showed slightly hyperactive reflexes in both arms; the abdominal reflexes were absent; the cremasteric reflexes were normal; the cranial nerves were normal; the reflexes in both legs were slightly hyperactive and this was more marked on the left; the great toe signs (Babinski, Oppenheim and Chaddock) were negative on the right but positive on the left. There were no sensory abnormalities. The optic fundi showed hemorrhages and severe hypertensive changes in the vessels. X-rays of the skull were negative.

Laboratory studies: Urinalysis showed two plus albumin and two plus red blood cells; the spinal fluid was slightly cloudy and contained 55 mg. per cent protein, two leukocytes and 4,000 erythrocytes per cubic millimeter, and 80 mg. per cent sugar. Blood urea nitrogen was 94.5 mg. per cent. For several days he complained of headache, stiffness of the neck, and backache, but this gradually subsided. His left leg became moderately spastic and he developed left foot-drop. He was discharged on March 10, 1943, two months after admission, with a diagnosis of hypertension with cerebral hemorrhage and renal insufficiency. At home he remained in bed most of the time, and had little improvement in his left hemiplegia.

On April 13, 1943, he suddenly lost consciousness and had several generalized convulsions. He was admitted to the hospital in an unconscious state. He continued to have repeated convulsions for an hour, until they were controlled by phlebotomy and intravenous magnesium sulfate. The convulsions were generalized but seemed to originate in the left arm and leg. His temperature was 101.2, pulse rate 110, blood pressure 240/150. His heart again seemed moderately enlarged, had regular rhythm, and no murmurs were heard. His lungs were clear and no abdominal masses were palpated. Neurological examination revealed mystagmus to the left, and left homonomous hemianopsia. There was weakness and moderate atrophy of the left arm and leg, and the left foot was plantar-flexed and internally rotated. Reflexes were slightly hyperactive in the right arm and leg, and moderately hyperactive in the left arm and leg. The great toe signs were positive bilaterally. There was weakness of the lower half of the left side of the face.

Laboratory studies: The hemoglobin was 49 per cent (Sahli); his white blood count was 11,250 with 83 per cent neutrophiles, 15 per cent lymphocytes and 2 per cent monocytes; urinalysis showed two plus albumin and one plus red blood cells, and the specific gravity was 1.012; Blood urea nitrogen was 91 mg. per cent; creatinine was 6.8 mg. per cent; electrocardiogram showed left axis deviation but was essentially negative; Kline and Rytz were negative; spinal fluid was clear, with no cells and normal pressure.

His temperature remained normal for the next three weeks. He was lethargic and confused, and frequently had muscular twitching in his extremities. On May 8, 1943, his temperature rose to 101.8 degrees, and it remained elevated until his death. Spinal fluid taken May 8, 1943, was cloudy and contained 103 mg. per cent protein; there were 8,800 red cells and 620 leukocytes per cubic millimeter, with 77 per cent neutrophiles. He became unconscious, and remained so until his death. During the last three days he had several generalized convulsions. Several spinal taps showed slight to moderate increase in pressure. Moderately choked discs developed. Several urinalyses showed one to four plus albumin, a few red cells, and the specific gravity ranged from 1.010 to 1.013.

DR. HERTZOG: Here is a forty-one-year-old man with severe hypertension. Blood pressure readings were in the neighborhood of 220/160 and 240/150. We know that about 15 per cent of patients having primary hypertension die from cerebral hemorrhages or thrombosis

with infarction of the brain. About 10 per cent die from uremia due to the vascular damage to the kidneys. The remainder and greater majority die from congestive heart failure and coronary sclerosis. When no cardiac failure is present the heart shows only left ventricular hypertrophy. Hypertension predisposes to coronary sclerosis. This man had both the findings of uremia and a cerebral accident. Dr. Arthur will give the autopsy findings.

DR. ARTHUR: The body was well nourished and there was no edema or jaundice. The heart weighed 540 grams, and showed hypertrophy of the left ventricle. The valves were normal, and there was only minimal coronary sclerosis. The right lung weighed 800 grams, the left 420 grams. On section, the lungs showed congestion and patchy pneumonia, especially in the right lower lobe. There were 1,000 c.c. of blood-tinged cloudy fluid in the right pleural cavity, and 300 c.c. in the left. The liver and spleen were of normal size and appearance. The gastro-intestinal tract, pancreas and adrenals appeared normal. The kidneys revealed an unsuspected lesion—polycystic disease. The right kidney weighed 820 grams, the left 1,240 grams. Both contained hundreds of cysts up to 2 cm. in diameter, with only narrow bridges of renal tissue between the cysts. The cysts contained clear fluid. The pelves, ureters, bladder and prostate gland appeared normal. The brain showed slight flattening of the convolutions and the pia-arachnoid was slightly cloudy. The large arteries at the base of the brain showed only slight sclerosis. On sectioning, a slightly fibrous yellow area of infarction was found in the right parietal lobe. It extended from the lateral ventricle to the cortex, and measured 7x3x2 cm. There was a fresh hemorrhage 2 cm. in maximum diameter in the left lenticular nucleus. There was also an old shrunken infarct 3 cm. in maximum diameter in the inferior portion of the right lobe of the cerebellum.

DR. LOFSNESS: The polycystic kidneys were an unexpected finding in this case. Microscopically, sections of the kidney show the grossly visible cysts. Between them, the renal parenchyma shows numerous hyaline glomeruli associated with tubular atrophy and a mild lymphocytic infiltration. Some of the glomeruli are still open and are associated with dilated tubules, many of which contain casts. These functioning glomeruli are not overly cellular and do not suggest glomerulonephritis. There is marked hyaline arteriolsclerosis, and a few arterioles are thrombosed and associated with infarcted glomeruli. Some of the small arteries show collagenous intimal thickening, with marked narrowing of their lumina. This is the pattern of hypertensive kidney disease, and we feel that this patient has two distinct kidney lesions—polycystic disease and arteriolosclerosis. This section from the infarct in the right parietal region shows an area of necrosis partially replaced by glial proliferation in which there are numerous macrophages filled with fat and others containing hemosiderin. This is probably the lesion which caused his left hemiplegia two years ago, and it was probably increased in size at the time of his automobile accident in January, 1943. The numerous macrophages containing old blood pigment suggest it is due to hemorrhage and not thrombosis. A section through the left lenticular nucleus shows fresh hemorrhage, with no cellular reaction. A section from the lower lobe of the right lung shows pneumonia. The liver shows only a few microscopic cysts in the portal spaces, indicating minimal cystic disease of the liver. No cysts were seen grossly. Sometimes cystic disease of the liver and pancreas accompanies polycystic kidney disease, and occasionally is marked enough to dominate the picture.

Congenital polycystic disease of the kidney is relatively rare. Bell found clinical bilateral polycystic kidneys once in every 600 autopsies. The frequency in different statistics varies with the proportion of subclinical and hypoplastic cases that are included. About 30 per cent of the cases die in infancy or are stillborn. There are few deaths during the second and third decades but many die in the fourth and fifth decades. Most of them have hypertension and renal insufficiency and unless the enlarged kidneys are palpated, a clinical diagnosis of chronic glomerulonephritis usually is made. The blood pressure is seldom as high as in this case. In view of the microscopic changes in the kidneys, we feel that in addition he had essential hypertention. The cause of death was uremia, cerebral hemorrhages, and terminal bronchopneumonia.

Anatomic Diagnosis: (1) Essential hypertension with uremia; (2) congenital polycystic kidneys; (3) multiple cerebral hemorrhages; (4) hypertrophy of heart; (5) bronchopneumonia.

CHINESE BLOOD BANK

A Chinese blood bank, opened June 7 at 154 Nassau Street, New York City, to seek blood donations for soldiers of the Chinese armies, will accept the blood of persons who have had malaria, according to its sponsor, the American Bureau for Medical Aid to China. This can be done by using the Seitz filter, which eliminates malaria micro-organisms.

Almost every Chinese has had malaria at some time in his life, and the sponsors of the project realized that there could be few Chinese donors to the blood bank if persons who had suffered from the disease were ruled out. Dr. John Scudder of Presbyterian Hospital, who as Chairman of the Blood Bank Committee of ABMAC, has been largely responsible for carrying through the project, had tested and proved the efficacy of the filter in Puerto Rico.

Blood donations received at the bank are converted in its own laboratories into dry plasma and shipped to China in American army planes. The medical staff members of the blood bank, all of whom are Chinese, have had special training in American hospitals for this work and eventually will go to China as a unit to set up the first blood bank there.

CASE REPORTS

CONGENITAL ARTERIOVENOUS ANEURYSM

RAMONA L. TODD, Ph.D., M.D.

Minneapolis, Minnesota

THE following case of congenital arteriovenous aneurysm is of interest because of its rarity, and some of the findings are worthy of note. Pemberton and Saint[5] reported a series of nine congenital arteriovenous communications seen at the Mayo Clinic from 1916 to 1928. Lewis,[7] in 1930, collected twenty-four cases from the literature and added six of his own. Horton[6] observed twenty-four cases at the Mayo Clinic from 1929 to 1931. Reid and McGuire,[9] in 1940, reported thirty instances of aneurysm which included five congenital arteriovenous communications. Aside from these series several writers have reported one or two cases, but the total number in the literature is not great.

William Hunter is credited with the first accurate description of arteriovenous aneurysm[4] and in his report in 1757 he noted the presence of a continuous murmur over the site of the communication. Branham,[3] 1890, found that pressure over a large acquired fistula causes a slowing of the pulse rate, and this phenomenon is generally known as Branham's sign, although it was demonstrated by other observers as early as 1875. Branham's sign, according to Holman,[6] is the first evidence that the circulatory bed through which the short-circuited blood flows is beginning to dilate.

Report of Case

C. W. S., aged nineteen, was first seen in the Students' Health Service dispensary on August 6, 1942. His complaints were swelling and aching pain of the right hand and lower forearm when the arm was dependent, weakness of right arm and hand, tenderness of the skin of the right hand, nosebleeds, episodes of dizziness and "pounding" in the head during the previous year. Symptoms referable to the right upper extremity had been present since birth but had been more marked during the past year. He had never consulted a physician because of those symptoms, but his mother had noticed the abnormality of the right arm when the patient was an infant.

He had had no other serious illnesses in his lifetime. He had had no operations except tonsillectomy and no accidental injuries. So far as could be determined, birth had been normal. Family history revealed no significant physical defects among relatives.

The patient was 71 inches tall and weighed 190 pounds. Examination showed the head and neck, heart and lungs, abdomen and lower extremities to be normal. The distal phalanges of the right hand were markedly clubbed and the nails were of watch-crystal shape. The nail beds were markedly cyanotic. The left hand appeared to be entirely normal. The skin of the right hand and arm was pale, whereas that of the left arm was pink. The right hand and arm felt much warmer to the touch than the left, a fact which the patient had noted subjectively. The superficial veins in the right hand and forearm were enlarged and tortuous (Fig. 1),

Fig. 1. The appearance of the dorsum of the right hand with its dilated veins as compared to the normal left hand. Infra-red photograph.

Fig. 2. Infra-red photograph of the right arm showing the dilated superficial veins.

and a mass of dilated veins extending to about nine centimeters above the elbow was apparent on the ventral surface of the arm (Fig. 2). There was a mass of dilated veins measuring five centimeters in diameter just posterior to the right axilla.

A "six-foot" roentgenogram revealed a normal heart and the electrocardiogram showed normal findings. Roentgenograms of the right shoulder, both hands, thoracic and cervical vertebræ revealed no osseous abnormalities. The measurements of the two upper extremeties are recorded in Table I. There was little difference in the sizes of the two arms when both were held upward. On being held in the dependent position for

From the Students' Health Service, University of Minnesota.

two minutes, the right hand increased 1.5 centimeters in circumference just proximal to the metacarpophalangeal joints.

The radial pulse was 88 at each wrist, and was rapidly rising and rapidly falling in character. Strength of pulsation was greater in the left radial artery than in the right. A thrill was felt over the veins above the right elbow and a faint, soft, continuous murmur with maximum intensity at the proximal edge of the dilated vessels was heard. Digital pressure over this point caused first a slowing and then cessation of the right radial pulse. There was also a slowing of the left radial pulse. The apical heart rate was speeded for one minute, then slowed to 56 during the application of pressure over the dilated veins and a continuous murmur was heard over the precordium with maximum intensity at the apex. Pressure over the same area on the left arm produced no changes in auscultation findings in the heart except to speed the rate from 88 to 96 beats a minute. The blood pressure cuff was placed on the right arm with the bag covering the group of dilated veins on the ventral surface. Inflation of the cuff to 30-40 mm. Hg. caused the radial pulse to drop from 88 to 60. Further increase in pressure (40-50 mm. Hg.) resulted in cessation of radial pulse in the right wrist. This procedure was repeated several times with the patient in the supine position, then in the sitting position, with the same results.

Arterial blood pressure (sitting position) was 162/94 in the left arm and 166/96 in the right arm. On another occasion it was 180/80 in the left arm. After the patient lay in the supine position for twenty minutes, he was found to have a blood pressure (left arm) of 160/94. Pressure over the mass of dilated veins increased the pressure to 170/104. With the patient in the sitting position the blood pressure was 166/96. Pressure over the mass of veins increased the pressure to 174/110.

Cold pressor tests were done on August 11, 1942. The standard procedure was followed.[2,3] "Basal" blood pressure was determined by having the patient lie in the supine position for thirty minutes. Temperature of the water was kept at 4° C. Findings are shown in Table II.

Venous pressure in the median basilic vein of the left arm was 14 centimeters of water and in the right arm 15.5 centimeters. Arterial pulsations were evident when the needle was in the vein in the right arm; the range noted was 12 to 18.5 centimeters of water. Blood urea nitrogen was 11 mg. per cent and urinalysis was normal.

A diagnosis of congenital arteriovenous aneurysm with numerous small communications was made.* After consideration of the possibility of encountering many small passages and difficulty of dissection, it was decided to defer treatment until such time when cardiac damage makes surgical procedure imperative and justifies the probable amputation of the right upper extremity if attempt at repair is not successful. The difficulty in treatment of congenital arteriovenous aneurysms lies in the fact that the abnormal communications between arteries and veins are usually multiple,[4] and there is ample indication that this is true in this case.

The barely audible bruit in the case herewith presented is interpreted as resulting from the presence of at least one communication of sufficient size to cause a murmur.

TABLE I. COMPARISON OF SIZE OF ARM WITH ARTERIOVENOUS ANEURYSM TO OTHER ARM*

Upper Extremity	Circumference			Length
	Palm	Mid-forearm	Mid-arm	
Right	22 cm.	26.5 cm.	28.5 cm.	85.0 cm.
Left (Normal)	22 cm.	25.5 cm.	29.0 cm.	84.5 cm.

*All readings were taken at measured distances from a fixed point in order to secure comparable data. Length was taken from acromial process to tip of middle finger.

TABLE II. COLD PRESSOR TEST

		"Basal" Pressure	Hand in Water 30 Seconds	Hand in Water 60 Seconds	Time to Return to Basal Level
Right hand in water; cuff on left arm	Syst.	160	160	164	5 minutes
	Dias.	94	100	104	
Left hand in water; cuff on right arm	Syst.	160	170	170	15 minutes
	Dias.	94	120	120	

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*Confirmed by consultation with Dr. B. T. Horton, Rochester, Minnesota.

HISTORY OF MEDICINE IN DODGE COUNTY

BY JAMES ECKMAN
Rochester, Minnesota

and

CHARLES E. BIGELOW, M.D.
Dodge Center, Minnesota

(Continued from June issue)

Another itinerant physician, not known to be a quack, however, was a **Dr. J. V. Frost,** who came to Concord in January of 1884. He made extravagant promises as to his ability to cure chronic diseases, but soon left Concord for lack of patronage. A brief commentary on Doctor Frost's experiences in the village of Kasson in January of 1884 was provided by the *Dodge County Republican* of that village. In its issue for January 17, 1884, the newspaper observed:

> Doctor Frost visited this town on Monday in the capacity of a lecturer. On Monday evening, after a very interesting lecture on physiognomy, he exhibited the wonderful mysteries of messmerism [*sic*]. On Tuesday night, he lectured on marriage, at the close of which he tried but failed to find a messmeric subject.

In its issue of one week later (January 24, 1884) this newspaper commented grimly:

> Dr. J. V. Frost, who lectured in this village on Monday and Tuesday evenings of last week, left on Wednesday without paying his hall rent. The fact is he had no money to pay with, and pursued the only course left for him in his estimation. The Doctor is behind the times many years and cannot succeed until he reaches the front of science as now taught. He represents a system that has long gone out of use and no longer attracts.

Some of the patent remedies advertised in the *Dodge County Republican* itself, however, probably were no more efficacious than the therapeutic methods of Doctor Frost. In the first part of 1885 some of the compounds offered for sale through the columns of this newspaper were Doctor Guysott's Yellow Dock and Sarsaparilla, Bucklen's Arnica Salve and Taylor's Cherokee Remedy of Sweet Gum and Mullein.

An institution in the East which repeatedly advertised in this newspaper was the "World's Dispensary Medical Association," of 663 Main Street, Buffalo, New York, which operated the "Invalid's Hotel and Surgical Institute—Not a Hospital, but a pleasant Remedial Home, organized with A FULL STAFF OF EIGHTEEN PHYSICIANS AND SURGEONS and exclusively devoted to the treatment of all Chronic Diseases." Closer to Minnesota was "Dr. McNamara's Medical Rooms, Established 1861, for the radical cure of Nervous and Sexual Diseases, 580 Broadway, Milwaukee."

Reproduced in the columns of the *Dodge County Republican* at various times were reports of the status of the public health in Kasson, such as the one which follows, taken from the issue of April 23, 1885.

BOARD OF HEALTH

At a regular meeting of the Kasson Board of Health held in the office of Geo. B. Arnold, on Monday evening, April 21st, the following resolutions were unanimously adopted:

RESOLVED, That lot-owners are required to abate all nuisances on their respective lots; all cellars, privy vaults and piles of garbage be disinfected and purified by the 15th of May, in accordance with ordinance No. 46, of the village of Kasson.

RESOLVED, that notice be given to lot-owners of our action, by publishing these resolutions in the Dodge County Republican.

RESOLVED, That our regular monthly meetings be held on the last Tuesday of each month.

H. T. TURNER, President.

J. G. WHEELER, Secretary.

From about 1884 to 1886, it would appear, **Dr. Charles Hill** (1826-1914) of Pine Island was health officer of Milton Township in Dodge County.[128] He reported to the Minnesota State Board of Health and Vital Statistics that from August 1, 1884, to December 1, 1886, he had noted two instances of scarlatina, in one of which the patient had died. **Dr. Osmon F. Way** (1858-1936), who during the same period was health officer of Claremont, reported[128] that three patients had fallen victim to diphtheria in Claremont, and that all three patients had died of the disease.

At some time after 1882 (probably in 1885) **Dr. Charles W. Coleman** (1855-1925), who had been reared in Dodge County, settled at Hayfield to practice medicine. The university examiner and registrar of the State University of Iowa[129] has reported that Doctor Coleman was a student in the Department of Homeopathic Medicine of that institution in 1882, but that he was not graduated as a Doctor of Medicine. He was licensed to practice medicine in Minnesota by affidavit in 1887, but a record of his medical education was not obtained at the time.[40] The first physician in Hayfield, Doctor Coleman left the town in 1894, and it is believed that thereafter he did not practice medicine.

Dr. John C. McMartin (1863-1890), who had been born in Ripley Township in Dodge County, had a professional notice in the first issue of the *Dodge County Republican*[130] for 1885:

J. C. McMARTIN, M.D.
Physician and Surgeon
Dodge Center, Minn.
Office over Hunt's Drug Store

Doctor McMartin had studied medicine at the old Minnesota College Hospital in Minneapolis, but did not in 1885 have the degree of Doctor of Medicine, nor was he at the time licensed to practice medicine in Minnesota.[40] He went back to the Minnesota College Hospital in January of 1885, and in September of that year went to Louisville, Kentucky, to matriculate at the old Louisville Medical College.[131] He was graduated from this school in 1886.[132]

In October of 1885 **Dr. Charles W. Merrill** came to West Concord from Rock Elm, Wisconsin.[133] He had been graduated from the Cleveland Medical College of Western Reserve College in 1878, and was licensed to practice medicine in Minnesota on October 16, 1885.[40]

In April of 1886, as previously stated, Doctor Porter of Claremont traded his stock of drugs to Doctor Coleman of Hayfield for Kansas land,[124] and in May he left Claremont never to return, so far as is known. In October of

1886 he was living in DuBois, Nebraska.[134] The career of this interesting pioneer physician will be recounted later.

In March, also, Doctor McMartin, who now had his degree from the Louisville Medical College, located in Mantorville and saw his first patient there.[132] Two weeks later he removed to Dodge Center, and in May he moved to Kasson.

In May of 1886 Doctor Garver of Dodge Center, who was health officer of Wasioja Township (in which Dodge Center is included), reported[135] to the Minnesota State Board of Health and Vital Statistics that he had inspected various places in the township with these observations:

> Thorough inspection made. General condition fair. Pig-pens found too near wells ordered removed. Old-fashioned "holes in the ground" ordered cleaned out and above-ground receptacles substituted. Orders promptly obeyed and marked willingness to accept the suggestions of the board.

The slowly decaying hamlet of Wasioja received its last physician in September of 1886.[136] This was **Dr. Lewis Thomas Francis** (1855-1932) who had been graduated from the old Chicago Homœopathic Medical College in 1884. He had practiced in College Springs, Iowa, before he came to Wasioja, where he was to remain until 1902.

Dr. Elias Wells Kellogg (1859-1923), who had begun to study intermittently at the Rush Medical College in 1885, came to Dodge Center in February of 1887 to read medicine with **Dr. James A. Garver** (1814-1901), who at the time was seventy-three years old. Doctor Garver had taken a fancy to young Kellogg, who had come to Dodge County with a surveying crew for the old Minnesota and Northwestern Railway Company (now the Chicago and Great Western Railway Company). Young Kellogg studied with Doctor Garver and attended medical lectures at various times at the Rush Medical College of Chicago, from which he was graduated in 1889. He was never licensed to practice medicine in Minnesota.[40]

Dr. John C. McMartin left Kasson in May of 1887 to locate in Benson in Swift County.[137] He was already a victim of pulmonary tuberculosis, and within three years from this transfer to Swift County he was dead.

In May, also **Dr. Arthur L. Travis** (1861-1927) apparently decided that Dodge County was not to his liking, for he abandoned his office above the Central Store in Claremont in that month to go to Cottage Grove, Wisconsin, his native state.[138] He had opened an office in Claremont in April of 1887.[139]

It is believed that Dr. Charles W. Merrill left West Concord in the early part of 1887, for in May of that year **Dr. Elmer John Tiedemann** (1864-), a graduate of the Rush Medical College of Chicago in 1886, bought the team of horses that formerly had belonged to Doctor Merrill. Doctor Tiedemann remained in West Concord until 1890.

At some time in 1887 (possibly when Doctor Kellogg began to study medicine under Doctor Garver) **Dr. William H. Parker** (1859-1913), who had been in partnership with Doctor Garver at Dodge Center, left Dodge County. Where he went at this time is not known, but eventually he located at Earlville, Iowa.

It is believed that Doctor Kellogg himself left Dodge Center in 1888, possibly to continue his studies at the Rush Medical College of Chicago.

A physician of distinguished parentage came to Mantorville in November of 1888.[141] He was **Dr. Samuel H. Van Cleve** (1853-1912), son of a general of the War of the Rebellion and of a woman well known in the annals of

Minnesota, as will be shown. Doctor Van Cleve had been city physician of Minneapolis from 1885 to 1887, and it is believed that he came to Mantorville at the instance of **Dr. John Flood** (1850-1918), who was about to go to Chicago to continue his medical education. Doctor Van Cleve maintained Doctor Flood's practice for him while Doctor Flood was in Chicago, and when Doctor Flood returned in the spring of 1889, Doctor Van Cleve bought the Mantorville practice from him. Doctor Flood thereupon moved to Kasson.

For reasons not entirely clear to the authors the veteran eclectic physician, **Dr. Henry T. Turner** (1837-1913) of Kasson, moved to Walla Walla, Washington, late in 1888 or in the early part of 1889. Doctor Turner had been in Kasson since 1875, save for a short period in 1882 which he spent in Minneapolis. He died in Washington in 1913, as will be shown.

In June of 1889, so far as available evidence indicates, **Dr. Guy P. Corwin** (1855-1929), the first graduate of the University of Minnesota College of Medicine and Surgery to locate in Dodge County, settled for a short while in Wasioja, where he had been reared but not born. He had studied medicine with Doctor Flood at Mantorville, and had attended the old Minnesota Hospital College in Minneapolis, obtaining his degree in medicine from the University of Minnesota after examination, according to the procedure described by Beard.[90] Doctor Corwin did not stay long in Wasioja. In July of 1889 he took and failed to pass the examination for licensure conducted by the Minnesota State Board of Medical Examiners, and he never applied for re-examination.[40] By 1890 he was in Augusta, Wisconsin.

At some time in 1889 **Dr. James Mansfield Ryder** (1822-1900), who had come to Milton Township in 1855 primarily to farm, moved to Buffalo in Wright County.[142] Doctor Ryder may have practiced medicine prior to 1883, but he apparently did not practice it after that year, for he was never licensed to practice medicine in Minnesota.[40] He could easily have qualified for licensure by exemption under the law of 1883, had he wished to do so. He is not to be confused with Dr. Jacob Ryder (1843-1895) of Saint Paul.

The Arrival of Order, 1890-1900

By the year 1890 the practice of medicine in Dodge County had been established on a reasonably orderly basis. New men were coming to the county from good medical schools; it had become easier to regulate and even to prevent the activities of the itinerant quacks or occasional renegades who had plied their arts in the eighties, although it is nevertheless true that many of the older, poorly trained physicians (and in some cases physicians who had none but empiric experience in medicine) who had been legally empowered to practice medicine by the exemption clause of the law of 1883 were still in active practice. Some older physicians, like Doctor Garver of Dodge Center, were beginning to think of retiring from their more strenuous labors of previous years.

The days of the railroad builders ended in the eighties in Dodge County after the old Minnesota and Northwestern Railway Company constructed the last main lines in the county in 1885. Highways in the county, however, were still far from being comparable to the well-engineered, hard-surfaced thoroughfares of today. It was still as difficult for the physician of 1890 to reach many of his patients as it had been for the physician of 1860 or 1870. The advent of the telephone in some parts of the county meant only that the number of difficult and even hazardous journeys the physician had to make would be increased.* It was true in the nineties, as it is true today, that the welfare of

*One Dodge County physician, Dr. C. L. Chambers (1858-1904) of Kasson, actually was injured fatally on the roads of Dodge County, as will be shown herein.

the physician in an agricultural community varied according to the welfare of the community he lived in: he was paid for his professional services if money was available generally in his community; if it was not, he either waited for it or was not paid at all.

The influx of physicians into Dodge County in the nineties was greater than at any other time in the history of the region, even in the days when an abundance of free land could be had for the asking. Some of these physicians of the nineties stayed only a short while; others stayed to pursue successful careers and to become extremely valuable citizens. The county was not excessively far from Minneapolis and Saint Paul, where several good medical colleges were graduating well-equipped physicians annually; the territory which included Dodge County was pre-eminently rich in agricultural resources; and the towns within the county by this time had firm foundations, with recognized and appraisable channels of commercial activity which would attract the physician fully as much as the merchant, lawyer, banker or tradesman.

A physician who chose to leave a practice of thirty years in 1890 was **Dr. John Jacob Everhard** (1829-1908) of Kasson. He was a highly competent practitioner, well known throughout Southern Minnesota and in the state itself. At the solicitation of his wife's parents he left Kasson in April of 1890,[143] to go to Seneca, in Nemaha County, Kansas, only a few miles from Dr. Horace P. Porter (1839-1912) at DuBois, Nebraska. At the time, Dr. Everhard was sixty-one years old. So far as is known, he never returned to Dodge County, although he died in Minnesota.

Dr. Elmer John Tiedemann (1861-) of West Concord left that town in July of 1890, apparently because he did not care for the rigors of rural medical practice.[144] He removed to LaCrosse, Wisconsin, where he remained for some years. At present (1943) he is living in Adrian, Minnesota.

Shortly after Doctor Tiedemann left West Concord, a homeopathic physician settled in that town. He was **Dr. Cornelius V. Lynde** (1858-1926), and he came to West Concord from Faribault.[145] He stayed in West Concord for less than a year, going to Northfield in April of 1891.[146]

Dr. Everhard went to Kansas in the spring of 1890 because he was seeking a warmer climate than that of Minnesota, whereas in the fall of the same year **Dr. Charles Sumner Bigelow** (1845-1931) left Kansas to return to Dodge County. Kansas for about three years prior to 1890 had been devastated by exceptionally severe droughts. Dr. Bigelow returned to Dodge Center in October of 1890, and he remained there until 1912, save for a few months in 1898 and 1899 in which he had an office in Claremont.

Dr. John Flood (1850-1918) of Kasson left Dodge County in the spring of 1891, and by his going he brought a new physician to the county, **Dr. Charles Osborne Wright** (1864-). Dr. Wright, whose preceptor had been the veteran **Dr. William Thorne** (1820-1908) of Hastings, came from Hastings in Dakota County to buy Doctor Flood's practice at Kasson.[148] He had obtained his license to practice medicine in Minnesota only a few months previously, on April 10, 1891.[40]

While Doctor Wright was settling in Kasson, **Dr. Frank French Clifford** (1863-) of LeCenter, Minnesota, was visiting West Concord to determine whether or not he would locate there.[149] By June he was well established in the town,[150] and he remained there until October 1, 1941, when he moved to Rochester to live with a daughter. During his service of a half century to the people of West Concord he occupied several positions of trust and responsibility in the community.

Dr. Ranson of Dodge Center was accustomed to attend the sessions of the Minnesota State Medical Society. He did so in 1891, when the society held its twenty-third annual meeting in Minneapolis, and there he reported[151] to members of the organization his treatment of a patient in Waltham, Minnesota, who had intestinal obstruction. **Dr. Perry H. Millard** (1848-1897), at the time dean of the University of Minnesota College of Medicine and Surgery, assisted Dr. Ranson in this case.

Only one new physician came to Dodge County in 1892. He was **Dr. Carlos Lord Chambers** (1858-1904), and he had been reared in Mantorville, although he had not been born in Minnesota. He came from Canby, Minnesota to Kasson in January of 1892,[152] to open an office over William E. Porter's store in that town. Twelve years later he died in Minneapolis, after an operation performed for injuries he had sustained when he was thrown from his buggy while he was returning from a professional call in the country.

Soon after her graduation from the University of Minnesota College of Medicine and Surgery in 1893, **Dr. Louise Marie Gerber-Dietmeier** (1865-1936) came to West Concord. She was not a native of Dodge County, but she had been reared in the Swiss colony of Berne in Milton Township. Very shortly, however, she went to Ada, Minnesota, and by 1898 she was living in Jasper.

It has been stated that **Dr. Charles W. Coleman** (1855-1925) left the village of Hayfield in 1894 to live on his father's farm in Milton Township. In May of 1895 **Dr. Eric O. Giere** (1868-1942) moved from Madison, Minnesota, to Hayfield. He stayed in Hayfield less than two years, however, returning to Madison in January of 1897. He himself reported[153] that he came to Hayfield because of the proximity of that town to the Mayo Clinic in Rochester. Later in his career he organized at least three clinics of his own in Minnesota and South Dakota.

In the fall of 1895 **Dr. James McCrea** (1863-1939), a Canadian physician who had been graduated from the McGill University Faculty of Medicine in 1894, came to West Concord. He moved to Fulda, Minnesota, in March of 1896, and lived there until his death in 1939.[154]

Dr. Osmon F. Way of Claremont and Dr. Stephen W. Ranson of Dodge Center in March of 1896, it was recorded,[155] attended a primiparous patient seventeen years old for placenta prævia. The condition was interesting, and the case was reported in the *Transactions* of the Minnesota State Medical Society.[155]

In July of 1896 **Dr. William M. Edgerton** (1870-1939) rented an office in Claremont.[156] He had been graduated from the University of Minnesota College of Medicine and Surgery in 1896, and had received his license to practice medicine in Minnesota on June 9.[40] Like Doctor Van Cleve of Mantorville, Doctor Edgerton was of distinguished stock. His father, Alonzo Jay Edgerton (1827-1896), was a brevet brigadier general in the War of the Rebellion, and in 1881 was United States Senator from Minnesota. The elder Edgerton had come to Mantorville in 1855, but the son had been reared in the Territory of Dakota, to which his parents had moved when he was a boy. Doctor Edgerton stayed in Claremont until March of 1898, at which time he went to South Dakota.[157]

(To be continued in August issue)

References will appear at conclusion of article

President's Letter

THE veil of mystery behind which the cause of puerperal fever was hidden a hundred years ago has, long since, been torn away and today, in Minnesota, this disease has almost disappeared from the category of causes of death. This thought is suggested by the 100th anniversary of the publication of one of the great papers of medical literature. In 1843 Oliver Wendell Holmes, then a young man of 34 years, published his paper on "The Contagiousness of Puerperal Fever." Other authors before him had published case reports and had arrived at the same conclusion, but it remained for Holmes to gather such an array of clinical reports and present them in such convincing fashion as to make an unanswerable argument. In spite, however, of the preponderance of evidence that he presented, his conclusions met with violent opposition from some of the foremost members of the medical profession, and, unfortunately, he did not "follow through."

It may be a source of regret that Holmes did not follow his clinical demonstration by thorough scientific study, and support his circumstantial evidence by scientific proof. However, the glory that American science lost was, possibly, offset by the gain to American letters, when Holmes turned to the field of literature.

A Hungarian, Semmelweiss, took up the crusade and in 1849 published his first paper on the etiology of puerperal fever. He strengthened the foundations on which the concept of the contagiousness of the disease rested and made definite suggestions for the protection of parturient women against it. His discoveries also met violent opposition from the Professors and he died insane, his sensitive nature unable to stand the strain of the battle against prejudice.

It remained for Pasteur, in 1879, to announce the discovery of the cause of the infectious diseases, including puerperal fever. He was of tougher fiber, and opposition stimulated him to greater effort. One quotation from his writings, gives an insight into his character "Do repeat to me every criticism you hear; I much prefer them to praise, barren unless encouragement is wanted, which is certainly not my case; I have a lasting provision of faith and fire."

Verily, we are One World, and no nation has a monopoly of prejudice, intolerance and wilful blindness. But the heartening, encouraging observation to be made on this 100th anniversary, is that in Science we are, in fact, One World, and scientific discoveries made by an American, a Hungarian and a Frenchman are used today, irrespective of their origin, for the benefit of all mankind. No amount of artillery can make valid the doctrine of inherent racial superiority or inferiority.

President, Minnesota State Medical Association

Editorial

THE NEW COUNCIL ON MEDICAL SERVICE AND PUBLIC RELATIONS

THE new Council on Medical Service and Public Relations, formed recently in Chicago by the House of Delegates of the American Medical Association, is the direct outcome of action initiated by the North Central Medical Conference in Saint Paul last Fall. It paves the way for a new and effective public policy for medicine in the United States and it is highly significant that the first steps looking to its creation met with spontaneous enthusiasm and support from all parts of the country. Clearly, many medical leaders everywhere were feeling the need of better public relations and more effective coöperation with public agencies, not only in the war emergency, but in planning for postwar adjustments ahead.

The original action taken in Saint Paul was carried to the National Conference on Medical Service of which W. L. Burnap, M.D., of Fergus Falls, Chairman of our Council, was then Secretary and is now President. A resolution embodying the plan in general terms was presented to the Board of Trustees of the American Medical Association from that Conference. This resolution pointed to the need for a new and more realistic handling of the public affairs of the Association and this action was subsequently developed and made specific by a Committee of the Conference for presentation to the House of Delegates.

The resolution prepared by that Committee was presented to the Minnesota House of Delegates and unanimously approved here and in many other states whose delegates met before the Chicago meeting. It called for a "Committee on Medical Service" and specified that one of the principal duties of the Committee should be to establish a headquarters for information and advice to government agencies and to medical bodies, in Washington, D. C. Specific provisions were made for election of the nine members of the Committee and for the source of income and the character of personnel to be hired. The resolution was presented to the House of Delegates in Chicago by W. A. Coventry of Duluth, one of the delegates from Minnesota.

It is interesting to note that no less than eight other resolutions, all having a similar objective, were presented in Chicago. One of these, involving possible changes in the Constitution and By-Laws, was referred to the Reference Committee on Constitution and By-Laws. The others were referred to the Reference Committee on Medical Legislation and Public Relations and an unprecedented number of persons, totalling more than 150, crowded into the Committee rooms to be heard on the matter.

Both Reference Committees accepted the resolutions in principle. The Reference Committee on Medical Legislation and Public Relations recommended that a Committee on Medical Services be set up to be made up of six rather than nine members, as suggested in the National Conference resolution, but that the six should be selected on a basis of geographical representation and that the Board of Trustees should be instructed to provide facilities and personnel. The Reference Committee on Constitution and By-Laws recommended, in accordance with the proposal in the other resolution, that an autonomous Council, on a par with the other Councils of the Association, be established for the same purposes and also for the purpose of supervising new plans for delivery of medical service and all other matters relating to postwar adjustments. Both of these reports were accepted by the House of Delegates and submitted to the Board of Trustees with the request that the Board report back to the House on the matter within twenty-four hours.

A recommendation to consolidate the two reports was made by the Board of Trustees the next day. The Board proposed in its report

that the new agency should be a Council of six members on the same basis as other Councils of the Association, and that it should be called the Council on Medical Services and Public Relations.

The report of the Board of Trustees was accepted without a dissenting vote though some formidable opposition had developed from a few Southern delegates in the Committee hearings and in the first reports to the House of Delegates.

The Board of Trustees, meeting on the day following adjournment, duly appointed the members of the new Council. Among the appointtees was A. W. Adson of Rochester, Minnesota, who presented the matter to the National Conference on Medical Service in February and who spoke on the resolution on the floor of the House of Delegates. Besides Dr. Adson the members are: J. H. Fitzgibbon, Portland, Oregon; J. R. McVay, Kansas City, Missouri; J. P. Leathers, Nashville, Tennessee; E. J. McCormick, Toledo, Ohio; Louis Bauer, Hempstead, New York; Roger I. Lee, Boston, Chairman of the Board of Trustees, James E. Paullin, Atlanta, Georgia, President, and Brig. Gen. Fred W. Rankin, Lexington, Kentucky, Past President of the American Medical Association.

Obviously it now rests with the new Council how far and how effectively the new program will be carried forward. But the groundwork has been laid and the overwhelming sentiment of the delegates for a new public policy has been expressed. Minnesota physicians who had much to do with initiating the move will watch with interest the progress of the new agency.

COMPENSATION FOR OCCUPATIONAL DISEASES

TWO years ago, at the recommendation of the Governor, an interim committee of the legislature was appointed to investigate the advisability of the addition of other occupational diseases besides silicosis and asbestosis for compensation under the Workmen's Compensation Law. This committee, after considerable study and consultation, prepared a bill so providing which was passed by the last legislature.

The danger of injustice to the employer or employe in such a bill, if the determination of the relation of a disease causing disability or death to occupation were left to any one but medical men, was realized. Provision was therefore made that all cases which involve only the question of an occupational disease shall be decided by a medical board of three physicians. A panel of ten physicians with at least five years of medical experience with industrial disease and five x-ray specialists with the same period of professional experience is to be appointed by the Dean of the Medical School of the University, the Council of the State Medical Association, and the Governor. The petitioner and employer may each choose one name from the panel, and these two shall choose the third member. The decision of the committee of three physicians shall be final.

The bill was well composed and seems to have provided against many possible abuses and should provide proper compensation for disability or death resulting from strictly occupational diseases. The bill received the approval of the Council of the State Medical Association. It should be effective if enough physicians and x-ray specialists are still available in view of the number away in service.

The bill includes among other provisions for compulsory autopsies in disputed cases, the strict limitation under occupational diseases to those "arising out of and in the course of employment peculiar to the occupation . . . and due to causes in excess of the hazards ordinary of employment".

No compensation is provided for occupational disease unless it has been contracted within twelve months previous to the date of disablement except in silicosis or asbestosis, in which case the disease must have been contracted within three years of disablement. Also, only occupational diseases contracted since the law went into effect are compensable. Those suffering from silicosis or asbestosis must have been exposed to the dust five of the past ten years and at least three years in the state to qualify.

At hearings involving controversial medical questions, the petitioner and employer may each provide the testimony of one physician. If the

applicant is refused, that is the end of the matter except that the usual appeal may be made. If, on the other hand, "such finding and conclusion are in favor of the petitioner or if no question other than that of occupational disease is presented by the pleadings, the commission . . . shall forthwith appoint a medical board of three doctors of medicine selected from a panel of fifteen . . ."

The new law also allows the employer to provide for examination of new employes and for yearly examination of employes in hazardous occupations, the expense to be shared by employer and employe.

One of the most important provisions of the new law is that the commission keep records of employment and regularly inspects places of employment in which hazards of an occupational disease may exist. It shall also establish standards of working conditions after consulting with the Division of Industrial Diseases of the State Department of Health.

The justice of compensation to workmen for accidents in the form of bodily injury has been recognized for some time. The term "accident" has been extended to provide compensation for disability or death due to diseases strictly resulting from occupation. While there may be room for some difference of opinion in individual cases, a committee of three medical men should be able to decide.

ACCIDENTAL DROWNINGS

JULY is the month when death from drowning reaches its peak. During this month the fisherman and bather are out on the water or in it more than at any other time, although all the months from spring to fall have their quota of fatality from drowning.

We read* that about 4,600 men of the U. S. Merchant Marine have been reported missing, presumably most of them through drowning, in the nineteen months prior to May 1, 1943. This is a high figure. When we also read that about twice that number of civilians in the United States met death from drowning during this same period, it is difficult to believe. Something should be done about it.

While occasionally it is the expert swimmer who overconfidently takes chances which the novice would avoid and perishes from drowning, shock, cramp or unknown cause, most drownings are due to lack of the ability to swim. Those who are unable to swim have no business in canoes, row boats and sail boats. Even the most expert swimmer finds it a difficult task to rescue even a child who is unable to care for himself and who becomes panicky when suddenly thrown into the water.

Learning to swim should be universal if this needless mortality is to be prevented. All power to propaganda directed toward this goal. Most important, too, is general knowledge of the technique of artificial respiration; the instruction widely disseminated by the Red Cross first aid classes is worth much. Of more importance, however, is providing supervised opportunities at beaches and swimming pools for both children and adults so they may learn to swim.

*Statistical Bulletin, Metropolitan Life Insurance Company, 24:9, (May) 1943.

NEW YORK PHYSICIANS MEET QUOTA

In an editorial which appeared in our June issue, we wondered what the explanation was for the apparent backwardness in the enlistment of physicians in Massachusetts, Connecticut and New York. An editorial in the June 15 number of the *New York State Journal of Medicine* declares that any statements that New York State has been behind in meeting its 1942 quota have been in error. On February 1, 1943, New York State had 9,000 physicians in service. Its quota for 1942 was 8,600. Since February 1, 1943, some 800 to 900 more have joined to meet New York's 1943 quota of 2,100. We are very happy to correct the uncomplimentary report which was repeated in our columns.

FIGHTING BLOOD CLOTS

A new way of using heparin, the anti-blood-clotting chemical, which may have life-saving usefulness in war surgery as well as in preventing thrombosis and embolism after operations, was reported by Dr. Leo Loewe and Dr. Philip Rosenblatt, of New York.

These doctors have found a way to deposit the heparin under the skin in what might be called banks of the anti-clot chemical. As a result it gets into the blood in a slow, even way, without dangerous runs or bankruptcies. The use of safe anti-blood-clotting treatment over protracted periods is thus made possible and practicable.—*Science News Letter*, June 12, 1943.

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

RAILROAD BROTHERHOOD ENDORSES ASSOCIATION POLICY

The fight conducted by the Minnesota State Medical Association in the last legislative session against the appointment of Mr. N. H. Debel to the Industrial Commission had many public repercussions, most of them good.

None was more gratifying than the support and wholehearted approval of organized labor.

Working men and their associations have reason to value the right for which the physicians were fighting. They have felt the edge of Industrial Commission denial of those rights and appreciate keenly the soundness of the principle of free choice of physician which the medical association has always championed.

Doctors Applauded

The following memorandum on the 1943 session of the Legislature was prepared by Mr. Gottfrid Lindsten for the Brotherhood of Railroad Trainmen and distributed to all members, recently, as part of a legislative memorandum to members of the brotherhood. It is interesting not only because it applauds the stand of the Association on the issue of free choice, but because it takes note of the efforts of the Association, through its Committee on Public Policy, to maintain a high standard of service at state institutions for the mentally ill and the handicapped.

Undersigned entirely agrees with the following resolution adopted by the Minnesota State Medical Association through its House of Delegates in their 85th Annual Meeting at Duluth, Minnesota, in 1938, in which the Association set forth its position as in favor of the patient having the right to be attended by a physician of his own choice. Resolution follows:

BE IT RESOLVED that the Minnesota State Medical Association declare itself in thorough accord and support of the principle that, in the interest of good public policy, the patient shall be permitted to choose his own physician, in cases involving liability and compensation insurance, as well as in private practice.

Undersigned unreservedly concurs in the position of the Association that such principle is fundamental and a right which should be enjoyed by every American citizen. The Legislature had by previous enactment of law laudably guarded such right, even to the extent of according it to a recipient of relief. The Supreme Court of Minnesota has interpreted the law to the end that an injured workman has the right to be attended by a physician of his own choice.

The Supreme Court of Minnesota in 1922, in the case of Lading vs. City of Duluth, held that an injured workman has "the option or unquestioned right to choose his medical attendant * * *." Again in 1940, in the case of Carmody vs. the City of Saint Paul, the Supreme Court of Minnesota held that an injured employe "who insists upon treatment of his compensable injury by a physician of his own choice, can obtain the reasonable value of the services rendered by such physician." While railway employes in Minnesota are not subject to the State Workmen's Compensation Act, being under the Federal and State Liability Acts, I consider the interpretation to be of great importance.

The Association has faithfully at the Legislative halls, upheld the enunciated principle and the interpretation of the State Supreme Court in support thereof.

I thoroughly appreciate the efforts of the Association in that respect as evidenced by the splendid, patient efforts of the able, genial and great-hearted country physician, Dr. L. L. Sogge, of Windom, state legislative representative for the Association, and likewise, his unremitting and faithful efforts and that of his associates in advancing and maintaining the best possible medical services at the state institutions for the handicapped.

These public institutions for those who are given treatment thereat, should be granted fully adequate appropriation for expert medical and other personnel service. Their maintenance and development should be the common concern of the great mass of the workers. The best of care should be afforded the wards of the state who come in the gerat majority of instances, from the ranks of the workers. The Association's diligent efforts as in behalf of administration of these institutions free from political influences, is likewise respectfully acknowledged.

Fraternally
G. T. LINDSTEN

HOW TO SECURE PAYMENT OF RELIEF BILLS

Many physicians and social welfare workers of the state are still unaware of essential procedures for securing authorization and payment for medical care of the indigent sick.

A good many misunderstandings and complaints have their source in lack of information and every physician whose practice includes any relief work under supervision of the Division of Social Welfare should familiarize himself thoroughly with the routine procedures.

The communication printed below is from Mr. Bernard W. Levander, Director of the Division of Social Welfare, and addressed to chairmen of County Welfare Boards. It is printed in full here because it presents the matter clearly and succinctly and because physicians are in equal need of enlightenment.

Letters which pass through the office of the Medical Unit of the Division of Social Welfare indicate that many physicians and social welfare workers of the state are not properly informed regarding the proper procedures for getting authorization and collecting from townships and counties for medical care of the indigent sick. In an effort to clarify procedures which should be followed, some of the pertinent details of this often controversial matter are herewith explained.

Two Types of Care

With indigent cases, as well as others, there are two types of medical care, emergency and non-emergency. Both the emergency and the non-emergency cases can be of either a surgical or medical nature. It is a common fallacy in the minds of both physicians and social welfare workers to think that emergency cases are of necessity only surgical, and vice versa that medical cases are always non-emergency. There is the medical emergency case, and also, there is the surgical non-emergency case.

Only in the non-emergency case, whether of a medical or a surgical nature, is authorization in writing necessary before a township, municipality or county can be held legally liable for the bill. The proper official to contact for authorization is shown in the accompanying outline.

In indigent emergency cases, either medical or surgical, it is not necessary for the physician to have written authorization to care for the case before the bill for medical services is legally collectible from either the township or county. It is necessary, however, that within a reasonable time after the performance of such emergency service he notify the proper authority that the service was rendered. "Within a reasonable time" has been interpreted to be within 48 to 72 hours. The proper authority to notify is the person who ordinarily issues such authorization. This notification, in order to have the bill legally collectible from either township or county, should be in writing.

County System of Poor Relief

Type of Care	*Authorized By*
Medical	Executive Secretary of County Welfare Board
Hospital	County Commissioner or Executive Secretary of County Welfare Board†

Township System of Poor Relief

Type of Care	*Authorized By*
Medical	Appropriate town, village, or city official.
Hospital	County Commissioner or appropriate town, village or city official.†

†In some counties, the county welfare board (of which the executive secretary is the administrative agent) has been empowered by the board of county commissioners to authorize hospital care.

Written Authorization for Non-Emergency Case

It is apparent in both of these procedures that authorization in writing is not necessary until the case has been fully investigated. In the non-emergency case, the very nature of the illness insures several days' time for ample investigation to determine eligibility for medical care at public expense before authorization is issued. In the emergency case, the physician should notify the proper authority and such notification should be followed within a few days by an investigation of the eligibility of the patient for such service at public cost. When it has been determined as a result of this investigation, that the township or county is properly responsible for the bill for medical services of a non-emergency nature, written authorization is issued to the physician. After notification by the physician of the performance of emergency medical or surgical services, the bill for such services should be approved as soon as proper investigation determines the eligibility of the patient for such services at public cost. Even when the care is so approved, the bill usually cannot be paid until after the next meeting of either the county welfare board, board of county commissioners, or town or village board responsible for payment.

These few points are the ones of greatest controversy between physicians and county and township authorities when bills for medical services to indigents are involved.

This same information and procedure has been released to the Minnesota Medical Association for its members.

HEALTH INSURANCE IN CANADA

The Dominion of Canada is in the process of framing and putting into effect a compulsory health insurance bill to be set in motion in the same manner as the Social Security Act of the United States, on a basis of Federal grants-in-aid.

The provinces will develop their own legislation which must meet certain standards and specifications in order to qualify for the grants-in-aid.

If, as backers expect, the act is passed by the Canadian parliament this year, it will require another year and more for provincial legislatures to act and still another year to frame administrative regulations and prepare personnel and machinery for operation.

To Cover Entire Population

Many details remain to be thrashed out but, if the plan now proposed is adopted, it will cover the entire population. The insured person will pay at the rate of $26 a year but no individual will pay more than three per cent of his income for himself. If he is without gainful occupation or income, payment will be made out of public funds. The cost for children is to be spread out over the entire population and there will be no premium for children under 16. Total costs will be borne in part by taxation, in part by employers, in part by employed individuals over 16.

All licensed physicians will be eligible to furnish care under the law and each person is to have free choice of physician for himself and his children. Compensation may be by capitation or by fee-for-service or by salary or a combination of these methods to be determined by negotiations between the verious provincial governments and committees of the profession.

Medical Association Approves

Of most interest to physicians of the United States is the fact that the Canadian Medical Association has approved compulsory health insurance in principle and committees of its Council have consulted with the National Advisory Committee on Health Insurance in working out some aspects of the bill. The bill as formulated and presented did not embrace all of the twenty principles adopted as essential to a health insurance plan in July, 1942, by the Canadian Medical Association at its annual meeting; but it seems to be generally understood that many modifications may be expected in the formulation of provincial legislation.

Back of the action taken by the Canadian Association lies a geographic and economic situation which differs widely from the United States. The vast, thinly populated sections which characterize so much of Canada have always presented difficulties in the provision of medical services. The community doctor, tried out in Manitoba and other western provinces, was one answer to the problem. It was also one step toward federally-supported government medicine.

With real difficulties to meet, on the one hand, and with compulsory health insurance already an established precedent in England, on the other, there could be little doubt about the course the Dominion would eventually take. The physicians, themselves, apparently felt that opposition would merely weaken the influence of the association in shaping purely medical aspects of the Canadian plan.

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

Julian F. DuBois, M.D., Secretary

Minneapolis Woman Sentenced to One Year in Workhouse for Violation of State Narcotic Drug Law

Re: State of Minnesota vs. Minnie Algren, alias Helen Barr

On June 10, 1943, Minnie Algren, thirty-eight years of age, residing in the Washburn Apartments at 612 South 8th Street, Minneapolis, was sentenced to a term of one year in the Minneapolis Workhouse by the Hon. W. W. Bardwell, Judge of the District Court. The defendant had entered a plea of guilty on June 4, 1943, to an information charging her with fraudulently obtaining narcotic drugs. The defendant complained to the physician she consulted that she was suffering from gall-bladder pains and gave a fictitious name of Helen Barr, and a fictitious address of 2210 Emerson Avenue North, Minneapolis. According to the investigation made by the Federal Bureau of Narcotics, the defendant obtained three prescriptions from the physician: the first one on May 5, 1943, for 20 1/16 gr. dilaudid hypodermic tablets; the second one on May 20, 1943, for 20 ¼ gr. morphine sulphate hypodermic tablets, and the third one on May 21, 1943, for 20 1/16 gr. dilaudid hypodermic tablets.

The defendant was sentenced in 1939, in Minneapolis, to a term of eighteen months in the Federal Women's Reformatory at Alderson, West Virginia, for violating the Harrison Narcotic Act. The defendant also paid a $25.00 fine in Minneapolis Municipal Court in October, 1939, for violating the Minneapolis City Drug Ordinance. On December 22, 1941, she was sentenced at Eau Claire, Wisconsin, to one year in the Wisconsin State Reformatory for Women at Taycheedah, Wisconsin, for violating the Wisconsin Narcotic Drug Law.

This case has again demonstrated the carelessness that surrounds the prescribing of various derivatives of opium by a small minority of the medical profession.

The State Board of Medical Examiners has repeatedly warned the medical profession against prescribing or dispensing morphine to patients who have not been thoroughly examined and who suggest the medication desired, rather than having the physician prescribe it on his own initiative. In this particular case the patient indicated that only morphine or dilaudid gave her any relief. That statement alone should put any prudent practitioner of medicine on his guard. Nevertheless, we find three prescriptions being issued during the month of May by one physician to this defendant. The physician has surrendered his Federal Stamp Tax and Government Order Book for a period of two years as a penalty for his carelessness. No decision has been made with respect to a suspension of his medical license.

Woman Sentenced to One Year Workhouse Term in Minneapolis District Court

Re: State of Minnesota vs. Margaret Heyen, alias Margaret Dent

On June 10, 1943, Margaret Heyen, thirty years of age, alias Margaret Dent, pleaded guilty in the District Court of Hennepin County to an information charging her with fraudulently obtaining narcotic drugs. The defendant was sentenced the same day by the Hon. W. W. Bardwell, Judge of the District Court, to a term of one year in the Minneapolis Workhouse. The defendant was arrested following an investigation by the Federal Bureau of Narcotics, which disclosed that between February 6, 1943, and February 27, 1943, she had obtained three prescriptions from a physician, each calling for 20¼ gr. morphine sulphate hypodermic tablets. The defendant used a false name, to-wit: Margaret Dent, and falsely stated that she lived at a Minneapolis hotel. Her correct address at the time was Apartment 5, 1020 Hawthorne Avenue, Minneapolis. It is the opinion of the authorities that this defendant is not addicted to the use of morphine but was obtaining the prescriptions in order to secure the morphine for another person. The defendant was able to obtain the prescriptions on her statement to the physician that she was suffering from a tumor and that she had to have some relief.

The defendant has a previous Court record, having been sentenced in August, 1940, to a term of one year in the Minneapolis Workhouse for grand larceny in the second degree. At that time she was placed on probation for two years. On October 29, 1942, she was sentenced to ninety days in the Minneapolis Workhouse for violation of the Minneapolis City Drug Ordinance.

VITAMIN CHECKS GROWTH OF TRANSPLANTED CANCERS

Inositol, the sugar-like compound which prevents baldness in mice and is generally considered one of the B vitamins, checks the growth of transplanted cancers in mice, Dr. D. Laszlo and Dr. C. Leuchtenberger, of Mount Sinai Hospital report (*Science*, June 4).

The degree to which the growth of the transplanted tumors is checked depends on the size of the dose of inositol. Inositol, the scientific investigators state, can be used as a standard of reference for testing other substances that may inhibit tumor growth.

Dr. Laszlo and Dr. Leuchtenberger are members of a research team which previously has reported that complete regression or disappearance of nineteen out of forty-six spontaneous breast tumors in mice followed treatment with pearled barley.—*Science News Letter*, June 19, 1943.

In Memoriam

E. T. W. BOQUIST

Dr. E. T. W. Boquist, chief medical officer at the Minnesota Soldiers Home in Minneapolis, died April 29, 1943, at the age of fifty-one.

Dr. Boquist was born in 1891. He obtained his medical degree in 1916 from the University of Minnesota. He was a member of the Minnesota National Guard at the time the United States entered the first World War and he served as a lieutenant in the army medical corps in 1917-19. From 1940 to 1942 he was a major in the Minnesota State Guard.

In 1941 Dr. Boquist made a trip to Louisiana as a representative of the Minneapolis Y.M.C.A. to investigate and report on the recreational facilities of the army camps there. He found the facilities inadequate.

Dr. Boquist was a member of the Mark Hamilton Post of the American Legion, the University Masonic Lodge, the Swedish Hospital Staff and was also a member of the Hennepin County Medical Society, the Minnesota State and American Medical Associations.

He is survived by his widow, a son William, and a daughter Marjorie.

* * *

WILLIAM VARDEMAN LINDSAY

Dr. William V. Lindsay, former Winona city health officer, died suddenly April 24, 1943, at the age of sixty-nine.

Dr. Lindsay was born October 20, 1873, in Saint Paul, Missouri. He obtained his medical degree at Missouri Medical College, Saint Louis, Missouri, in 1898 and interned at Saint Luke's Hospital in Saint Paul, Minnesota. He then took a three months' postgraduate course at Washington University, Saint Louis. He began practice in Wentzville, Missouri, and then moved to Winona.

He entered the service as a captain in the medical corps in 1917 and was discharged a major after sixteen months in service, having been stationed a part of the time in Siberia.

He served as Health Officer of Winona from 1919 until 1940. Due to the health program developed in the city under Dr. Lindsay, the city placed second in its class in 1939 in the Chamber of Commerce contest and its health methods have been used as models by the United States Public Health Service.

Dr. Lindsay married Helen Mills in 1904. He is survived by his widow, two daughters, Mrs. Charles Worley, Saint Charles, Missouri, and Mrs. Paul Berkman, Washington, D. C., and three sisters.

He was a 32nd degree Mason and a member of the Winona County Medical Society, the Minnesota State and American Medical Associations.

Roosters at the Beltsville farm of the U. S. Department of Agriculture have lived four years after the surgical removal of their gizzards, proving these to be nonessential organs.

NEW POLICIES OF STATE DEPARTMENT OF HEALTH REGARDING BIOLOGICS

A Letter to the Medical Profession in Minnesota

Recently the State Board of Health decided upon certain new policies in relation to the distribution of biologics.

1. All biologics will be distributed from the Division of Preventable Diseases, University Campus, Minneapolis. Part of the biologics heretofore have been distributed from the Saint Paul office. This seems a logical arrangement since communicable diseases are reportable to the Division of Preventable Diseases and closer contact can be kept with the needs. Secondly, this Division renders both Saturday afternoon, Sunday and holiday, as well as night service, and biologics can be distributed more rapidly. In fact, the Division of Preventable Diseases has carried the biologics emergency service on Sundays and holidays heretofore.

2. The variety of therapeutic agents offered will be increased. There has been a tremendous reduction in morbidity and mortality in certain communicable diseases for which control means and specific therapeutic treatment have been practiced for years. In others, such as whooping cough and measles, the mortality is very high in young children and since there are therapeutic agents available which are of definite value, these will be offered as far as funds permit.

3. The greatest emphasis will be placed on immunization. This is especially important since a number of new immunizing agents have proven valuable the past few years. Our population needs to be better protected than usual because of the shortage of physicians.

The various therapeutic agents will be taken up first and the policies governing their distribution.

Diphtheria Antitoxin

(Distributed by Central Station through Thirty-eight Substations)

Beginning July 1, 1943, there will be thirty-eighth diphtheria antitoxin stations. The accompanying map shows the distribution of these throughout the state. It is believed that this number will be fully adequate as driving distances, train transportation, storms, et cetera, have been taken into account.

Up to the present there have been 190 diphtheria antitoxin distributing stations in Minnesota, an average of over two per county. When such stations were originally established there was even a larger number of stations. At that time, there were several hundred deaths from diphtheria each year and thousands of cases. Now there are only six to twelve deaths a year, and less than 100 persons who have clinical symptoms of the disease. When antitoxin stations were established there were fewer trains and no automobiles. Even though gasoline is limited now, it can always be obtained for emergency use. There has been quite a loss of diphtheria antitoxin in many stations due to outdating of the biologic, which means not only a serious financial loss to the state, which could be justified if adequate protection to health could not be given with less stations, but this loss has very serious consequences due to the shortage of biologics nationally. It is of interest to study the diphtheria deaths which occurred in 1942 to June 18, 1943. It will be noted that there were twelve deaths in 1942 (as compared with eight in 1941) and there have already been eight deaths in 1943. It will be seen by Table I that these deaths did not occur because antitoxin was not available, in fact, in many instances, there was an antitoxin station in the town or hospital where the patient died. It will also be noted

TABLE I. DIPHTHERIA DEATHS IN MINNESOTA
January-December, 1942

County	San. Dist.	Antitoxin Station	Phys. called	Antitoxin		Condition when antitoxin used	Culture	Sex	Age	Died	Immunized
				Amount (units)	Day given						
Beltrami	Bemidji Twp.	Bemidji C.	about 14th day		none given	—	+ (+ Vir.)	M	2 mos.	about 14th day	no
*Murray	Lowville Twp.	Lake Wilson V. (approx. 7 mi.)	5th day	25 M U 40 M U	5th day 6th day	not given	+	M	50	6th day	no
*Murray	Lowville Twp.	(approx. 7 mi.) Lake Wilson V.	5th day		none given	—	neg.	M	4	5th day	no
*Murray	Lowville Twp.	Pipestone C.	3rd day	15 M U 20 M U 20 M U 5 M U	7th day 8th day 9th day 10th day	Cyanotic	+	F	3	16th day (Hospitalized at Pipestone for 5 days; died 10 days after discharge.)	no
Pennington	Hickory Twp. (Mercy Hosp., Thief River Falls C.)	Thief River Falls C.	2nd day	30 M U	2nd day	Terminal	+ (+ Vir.)	M	7	3rd day	no
Pine	Chengwatona Twp. (Hosp., Pine City V.)	(approx. 22 mi.) Sandstone V.	6th day	30 M U	6th day	In extremis	+	F	3	8th day	no
Ramsey	St. Paul C. (Ancker Hosp., St. Paul C.)	St. Paul C.	1st day	20 M U	9th day	difficult respiration	none examined	M	7	9th day	no
Ramsey	St. Paul C. (Ancker Hosp., St. Paul C.)	St. Paul C.	5th day	30 M U	5th day	Dyspnoea, dysphonia, cyanosis	none examined	M	49	5th day	no
Traverse	Browns Valley	Browns Valley V.	no record		none given	—	none examined	F	5	5th day	two doses ?
Yellow Medicine	Granite Falls C.	Granite Falls C.	1st day	10 M U	5th day	Cyanotic	+ (+ Vir.)	M	4	5th day	no

No. Dakota	Barney V.	Breckenridge C.	no record	no record		no record	+	M	56	42nd day (Died in St. Francis Hosp., Breckenridge C., Wilkin Co.)	no
†So. Dakota	Easter Twp.	Graceville V.	no record		none given	—	+	M	3	18th day (Died in Graceville V., Big Stone Co. one hour after arrival)	no

*Same family
†Mother died in South Dakota three days later.

TABLE II. DIPHTHERIA DEATHS IN MINNESOTA
January 1 to June 18, 1943

County	San. Dist.	Antitoxin Station	Phys. called	Antitoxin		Condition when antitoxin used	Culture	Sex	Age	Died	Immunized
				Amount (units)	Day given						
Hennepin	Minneapolis C. (General Hospital)	Minneapolis C.	10th day	40 M 20 M	12th day 14th day	Poor	+ (+ Vir.)	M	58	21st day	—
Lyon	Minneota V.	Minneota V.	2nd day	40 M	7th day	Toxic	neg.	M	14 mos.	9th day	no
Lyon	Minneota V.	Minneota V.	8th day	70 M	9th day	Very toxic	+ (+ Vir.)	F	3	15th day	no
Ottertail	Elmo Twp.	Parkers Prairie V.	9th day	5 M 10 M	10th day 11th day	Toxic, difficult respiration	+	F	2	11th day (Died at Hosp., Parkers Prairie V.)	no
Ottertail	Henning Twp.	Henning V.	11th day		none given	In extremis	none	F	63	11th day	no
Todd	Bartlett Twp.	Long Prairie V. (approx. 20 mi.)	5th day	20 M 15 M	8th day 9th day	Toxic	+ (+ Vir.)	M	3	13th day	no
St. Louis	Duluth C. (St. Luke's Hospital)	Duluth C.	4th day	30 M	5th day	Cyanotic, difficult breathing	+ (+ Vir.)	M	57	5th day	?
Yellow Medicine	Granite Falls C.	Granite Falls C.	2nd day	10 M	3rd day	Cyanotic	+ (+ Vir.)	F	2½	3rd day	?

that in most instances, the physician was not called until it was too late to save the patient's life.

There appears to be some evidence that diphtheria is increasing in this state since there has been some increase in cases as well as deaths in 1943. Our epidemiological data shows that most of the communities where deaths occurred, were well immunized, but it will be noted from studying the individual cases that only one patient in this series had actually been immunized. It is important that October, 1942, was the first time that the gravis type of diphtheria organisms were identified in this state, and that in practically all fatal cases from October, 1942, from which we were able to obtain cultures, the gravis type of organism was found.

Meningococcus Serum and Antitoxin
(Distributed from Central Station)

Meningococcus serum has been furnished by the State Department of Health for many years. At times in the past few months, it has been impossible to obtain this product because the manufacturers must first fill the needs of the army and navy. The State Department will now also furnish meningococcic antitoxin as well, since there is good evidence that this is as effective as serum. There has been a definite increase in epidemic meningitis in 1943, *i.e.,* sixty-five cases up to June 18, compared with an average of twenty-three cases for the previous five years. However, there have been very few requests for meningococcic serum, no doubt because of the wide use of sulfa drugs. Although these drugs constitute adequate treatment in many cases of meningococcic meningitis, it is recognized that in certain cases serum and antitoxin are also needed. It should also be remembered that the meningococci are a variable group and that it may be found at any time that serum or antitoxin as well as sulfa drugs will be neeeded in the treatment of a higher proportion of cases.

Pneumococcus Serum
(Distributed from Central Station)

This product has been furnished since January, 1937. Since more and more efficient sulfa drugs have been developed, there has been less need for serum. However, there are certain patients on whom drugs cannot be used, or who do not respond to drugs, and in such instances serum is very essential. Because of the fact that pneumococcus typing is usually no longer an emergency, and because of the small amount of typing serum and therapeutic serum available (due to the needs of the army and navy), the Minnesota Department of Health is carrying out pneumococcus typing and therapeutic serum distribution at present *only* on an emergency basis. It is realized that it would be of great value epidemiologically to continue typing on the same basis as previously, but with lack of funds and materials, it does not seem warranted at this time, since our 1942 statistics show very little gained by this service.

Pertussis Hyperimmune Serum
(Distributed from Central Station)

In recent years, sufficient evidence has been accumulated as to the efficacy of this product to warrant its distribution. The drug will be offered only to patients under eighteen months, since three-fourths of the deaths from whooping cough in this state occur in children under one year of age.

B. Influenzæ Immune Serum
(Distributed from Central Station)

Before the advent of this product influenza bacillus meningitis was practically always fatal. Sulfa drugs are now used also, and there have been reports of some recoveries using the drug alone. However, the synergistic reaction between the drug and the serum, and chances of recovery are much greater if both are used. Since serum is very expensive, it is not often used. Although the disease may seem relatively unimportant, it is one of the commonest meningitides in children under two years. In 1942, twenty-two deaths were reported in this state. It is of interest that Pfeiffer influenza bacilli from spinal fluids were typed in seventeen cases in our laboratories and of these, ten recovered. An additional recovery was also reported from the Minneapolis General Hospital.

Measles Convalescent Serum
(Distributed from Central Station)

Since this product is of proven value in modifying measles, it will be distributed for this purpose only to children under eighteen months of age, since the majority of deaths occur before the above age.

Biologics for Immunization
Diphtheria-Tetanus
(Distributed from Central Station)

In the past both alum-precipitated diphtheria toxoid and fluid diphtheria toxoid have been distributed. Now that sufficient statistics have been compiled to demonstrate that in varying doses, one is as effective as the other, it would seem more desirable to distribute only alum-precipitated toxoid, since only two doses are required. It also should be pointed out that there are no more untoward reactions from the alum-precipitated toxoid than the fluid toxoid, even in older age groups. Since it is now also demonstrated that alum-precipitated tetanus toxoid gives an excellent immunity, it would also seem advisable to distribute this biologic. Although the number of tetanus deaths in this state each year is small, there are on the other hand, a considerable number of injured persons who receive prophylactic tetanus antitoxin, and who may become sensitized to horse serum. It would, therefore, seem better practice to immunize young children with a combination diphtheria-tetanus toxoid since in case of an accident which otherwise would require tetanus antitoxin, merely a step-up dose of tetanus toxoid is required. Another reason for combining these two products is that higher immunities apparently result without increase in reactions than would result if the two antigens were used separately. There is some diphtheria toxoid now on hand which can be used, but in the future only diphtheria-tetanus toxoid will be supplied. It is requested that the physician plan on at least five immunizations at a time, since due to cost, this product cannot be

distributed in single immunizations. *Babies should be immunized between eight and twelve months, or any time after six months.*

Smallpox Vaccine
(Distributed from Central Station)

In the past, the Department has distributed this only for groups. In the future, it will be given for single immunizations also. *Babies should have first vaccination by the first birthday.*

Pertussis Vaccine (Sauer)
(Distributed from Central Station)

Although this immunizing agent is still on an experimental basis, there is sufficient evidence to warrant the encouragement of its use. Because of the high fatality early in life (see above), this product will be distributed only for use in children under two years. It preferably should be the first immunization agent given and should be started *at age of six months or soon after.*

Typhoid Vaccine
(Distributed from Central Station)

This product has been manufactured and distributed by the Department Laboratories for about thirty years. Throughout the years, the vaccine has been made from typhoid and paratyphoid stock obtained from the Army Medical School and the exact methods used by them is followed in the manufacture of this product. Both plain and triple vaccine are made and it is distributed to any physician who requests it.

Tuberculin
(Distributed from Central Station)

This biologic, diluted for use, has been distributed for a number of years to physicians, and the product is sent out automatically every two weeks to physicians whose names are on our list.

Silver Nitrate Ampoules
(Distributed from Central Station)

This product has been distributed for many years and is distributed to any physician, accredited hospital or licensed midwife, upon request.

Arsenicals and Heavy Metals
(Distributed from Central Station)

Under certain conditions, drugs for the treatment of syphilis have been furnished since 1918. Since February, 1931, these drugs have been supplied for the treatment of needy patients on request from their physicians under the condition that each case be reported with the usual case data. (A special information sheet relating to the distribution of anti-syphilitic drugs will be sent to any physician on request.)

At a meeting of this Board April 9, 1943, Dr. Erling S. Platou, president, and Dr. Ruth E. Boynton, vice president, were appointed to serve as a committee to confer with and advise the members of the staffs of the Divisions of Administration and of Preventable Diseases in regard to the recent changes in relation to the distribution of biologics as given above.

From this date all requests for biologics and all inquiries concerning same should be addressed to the Division of Preventable Diseases, Minnesota Department of Health, University Campus, Minneapolis.

I wish to take this opportunity to thank the physicians and health officers for their coöperation in the past and to assure them that it is our desire to be of the greatest possible help to them in the protection of the public health.

Very respectfully,
A. J. CHESLEY, *Executive Officer,*
Minnesota Department of Health

A GUIDE FOR SETTING UP POLICIES AND PHYSICIANS' RECOMMENDATIONS FOR LOCAL PUBLIC HEALTH NURSING SERVICES

(May 1943 Revision—Approved by the Minnesota State Medical Association)

General Policies

It is highly important that public health nursing practices be consistent with the medical practices of the community. Accordingly, the Minnesota State Medical Association, the State Organization for Public Health Nursing, and the Division of Public Health Nursing, Minnesota Department of Health, submit a sample of minimum policies involving nursing procedures and instructions as a basis for guidance of local public health nursing agencies. It is intended that these minimum policies will be found sufficiently flexible to meet various local needs. They are as follows:

1. An agency employing public health nurses should have its basic program and contemplated changes approved by the physicians in the community.

2. The nurse emphasizes the importance of medical care, but she does not recommend the selection of an individual physician. She gives bedside nursing care under the direction of a licensed physician. Public health nurses working under the direction of local physicians may *give and read various diagnostic tests provided approval* has been given by the physicians of the community.

3. In special cases of economic need the public health nurse shall use the facilities provided by public and private agencies in coöperation with the family physician.

4. Records of nursing care should be kept on file by the nurse. The nurse should make a written report to the physician or agency whose patient she has contacted. Such report may be given to the patient to take to the physician, or may be delivered directly to

the physician. Carbon copies should be kept on file—a form is suggested in the Nurses' Manual supplied by the Minnesota Department of Health. In addition to reports requested by the local agency, the nurse shall make written reports through the board employing her to the state and local boards of health on such form and at such times as prescribed by the State Board of Health.

5. The establishment of clinics or other health activities which involve medical service shall be undertaken only upon the approval of the County or District Medical Society, or by the physicians in the community.

6. Every public health nurse should understand and support the state and local health laws and regulations and keep in direct contact with the local and state health departments.

7. Every nurse engaged in public health nursing should be approved by the Committee on Certification, for which provision has been made in the Minnesota State Health Laws and Regulations.

8. It is suggested that all public health nurses at the time of employment, and periodically as requested by the employing agency or the State Board of Health, present a satisfactory personal health record which includes recent smallpox vaccination, evidence of immunity to diphtheria, and freedom from active tuberculosis as determined by tuberculin tests and/or x-ray pictures of chest and other procedures as indicated.

9. The shortage of nurses now existing necessitates the use of reliable auxiliary workers in order to supply the necessary nursing care in homes. The public health nursing agency may with the approval of the family physician assign simple nursing duties to persons who have had training for such work. For example nurses' aides, practical nurses, subsidiary workers, and others who have had a course in home nursing. These women will receive guidance from the public health nursing agencies.

Physicians' Recommendations on Care of Patients

The following recommendations are submitted to physicians for their approval to be used as a guide to the nurse in her administration of nursing care, treatment, and medication in those emergencies where no physician is in attendance, when orders have not been left by the attending physician, or when the nurse has been unable to reach the physician for orders.

Physicians' recommendations to nurse are concerned with:

1. Teaching content of health education in the home and school or health center regarding the health and environmental sanitation of the family.

2. Nursing care of sick persons under or pending medical direction.

Emergencies and Accidents—All nurses are expected to be familiar with the technique adopted by the American Red Cross for first aid treatment and injuries, and in caring for such conditions she will limit herself to these accepted procedures. In the event of a severe accident immediate medical care should be secured by calling the nearest physician or hospital if it is not possible to locate the physician of the family; and if the patient is a minor, communicate with the parent or guardian immediately.

Communicable Disease Control—The control of communicable diseases is the responsibility, not only of the public health nurse and the official agency, but is also the concern of the medical profession and general populace. If communicable disease is suspected the nurse should explain to the family the elementary principles of isolation, concurrent and terminal disinfection, and such other measures which will aid in preventing the spread of disease. (See "Home Isolation Procedures" Manual for Public Health Nurses, Minnesota Department of Health.)

If the patient is attending school, the school official should be notified in writing in order that contacts of the patient may be properly observed. The health officers of the sanitary districts in which the school is located and in which the child resides should be notified of the occurrence of suspected communicable disease as provided by Regulation 318 of the Minnesota State Health Laws and Regulations. The nurse is expected to make the patient as comfortable as possible and to isolate him from all other persons. Any of the following symptoms shall be considered sufficient reason for such isolation:

Fever 100° or more	Sore throat
Coryza	Vomiting
Rash	Inflamed eyelids
Running ears	Pediculosis
Skin lesions suggesting scabies or impetigo	

In aiding physicians in the control of preventable diseases public health nurses are expected to coöperate with the local health officer and to follow the Regulations of the State Board of Health as outlined in Chapter 6 of the Minnesota State Health Laws and Regulations as issued by the Minnesota State Board of Health.

It is important that educational phases of smallpox vaccination and diphtheria immunization and other immunization such as prevention of whooping cough and measles be kept constantly in mind. The nurse should teach families that such immunizations are best done before the end of the first year and repeated at the discretion of the physician. Group immunization programs should be conducted under the auspices of a local medical society which may secure available biologics from the Minnesota Department of Health. The nurse's contribution to such programs consists of preliminary education of the community, making the necessary arrangements for carrying through the programs, assisting the physicians when the immunizations are being performed, summarizing reports, and keeping local records of immunization.

Tuberculosis—Infectious and potentially infectious cases (active or with tubercle bacilli in sputum) should be isolated preferably at a sanatorium following the diagnosis and recommendations of the attending physician or health officer. Such cases while awaiting admission to the sanatorium should be completely isolated at home. (See communicable disease isolation procedure in Public Health Nursing Manual supplied by the Minnesota Department of Health.) Special attention

should be given to adequate terminal disinfection after patient has left the household. Hospitalization should also be advised for other forms of tuberculosis on the approval of physician. Medical examinations, including tuberculin tests and x-ray pictures, if necessary, should be urged for all members of the family and other close contacts of tuberculosis cases.

Syphilis and Gonorrhea—As problems in relation to syphilis and gonorrhea are encountered or brought to the attention of public health nurses, all available information regarding these problems should be referred to the Division of Preventable Diseases, Minnesota Department of Health, for consultation and advice regarding future responsibility of the nurse. When cases are known to be under medical care, problems relating to them should first be discussed with the attending physician.

Public health nurses should always bear in mind that information relating to venereal disease should be kept confidential. See Regulation 2510, Minnesota State Health Laws and Regulations.

Health of Mothers—The public health nurse's work with mothers and infants is an important part of public health service. She should secure standing orders from individual physicians for treatment and nursing procedure to be carried out for these individuals.

In working with expectant mothers the aims should be to bring the women under early and continuous medical care; to teach the elements of prenatal hygiene; and to carry out nursing care or treatments ordered by the physician. Specific help which public health nurses may give to mothers is: help arrange for delivery care for the mother, and immediate care for the new baby. Plan to have a registered nurse present during delivery if possible. Demonstrate the preparation of sterile supplies when a home delivery is planned. Give emergency care in event of postpartum hemmorrhage—send for the physician, massage uterus against sacrum, keep patient quiet and warm, and carry out the measures recommended in the treatment of shock. Give bed-bath and perineal cleansing (demonstrate to attendant). Give treatments ordered by physician (demonstrate to attendant).

The nurse emphasizes the value of rest and other aspects of hygiene during the involution period and the value of the postpartum medical checkup. A most important phase of maternal care is instruction in the value of breast feeding for the baby with its attendant physical and emotional preparation of the mother for a successful breast feeding experience.

Health of Infants and Young Children—The birth of a premature infant is an emergency in which the public health nurse must be prepared to function under the direction of the attending physician. A definite prearranged program of coöperation between the physician and the public health nursing service will enhance this program. The nurse's contribution of aid and instruction in maintaining body temperature, feeding techniques, isolation and other nursing care can be invaluable.

A most important phase of public health nursing is instruction in care, feeding and immunization of infants. Every effort should be made to contact the mother of the new infant within forty-eight hours after birth in the home or baby's return from the hospital.

The definite decline in breast feeding challenges the public health nurse to encourage mothers to nurse their infants. The nurse must be familiar with the various techniques involved. She must make sure that there are no contra-indications.

The prophylactic protection of the baby's eyes and registration of birth as required by state law is the nurse's responsibility when there is no doctor in attendance.

The nurse should concern herself with guiding parents of preschool children in habit training, adequate nutrition, good hygiene and immunizations. Close cooperation should prevail between nurses and organizations such as the Congress of Parents and Teachers, American Legion Auxiliaries, and others particularly interested in promoting such special health programs as child health conferences, dental health projects, etc., for the preschool child.

Health of School Children—The public health nurse in school health work is usually under the immediate direction of the school administrator. In addition, the Nursing Advisory Committee or the School Health Council each with medical, dental, and lay representation helps guide the service. The object of the school health program is to coöperate with physicians and dentists to improve the health of school children by making the health examination an educational experience, not only for the child but also for the parents and teachers. The nurse consults with parents on problems of child health and environment and guides parents to other sources of aid which may be needed.

An important part of the school nurse's work is to aid in the control of communicable disease by helping parents and teachers recognize conditions for which the child should be isolated. Regulation 318 of the State Board of Health Laws and Regulations provides for reporting children who are ill to the school physician for medical examination. On the other hand where there is no school physician "it shall be the duty of the teacher or head of the school to exclude from school all pupils, who, in his opinion, show signs of a communicable disease." A nurse may perform these duties when so directed by the school physician or the health officer.

Morbidity—Nursing service rendered by public health nurses to patients ill from any cause is included under this category. In this service the physician-nurse cooperation is necessary to the welfare of the patient. The public health nurse must make every effort to keep the physician informed of services she has given to the patient and progress she has observed. Except in services where the policies include bedside nursing, the

public health nurse cannot be expected to give continuous bedside care to an individual; first, because of the need for equitable distribution of all phases of a generalized service to all sections of the community; and second, because of the possibility of disrupting the balance of a generalized program. However, where medical and hospital personnel are reduced the public health nurse working under medical direction may render care to the sick in their homes for demonstration and teaching purposes thus giving vital assistance to physicians as well as improving the care of the patient.

Whenever the public health nursing agency has assigned nursing duties to an auxiliary worker, a public health nurse will visit the case frequently enough to know that treatment and care are given as ordered by the physician.

It is generally accepted that the first morbidity visit may be made without or before a physician is in attendance. Standing orders should include definite regulations regarding subsequent visits as well as policies to guide the nurse on the first visit. At the first call every effort should be made to have the patient contact the physician of his choice. The physician will then give orders to the nurse for subsequent visits. Written or telephoned reports to the physician are desirable, both for the first and subsequent visits. Ordinarily, repeat home visits, when there is no physician in attendance, are made chiefly to urge medical supervision and to secure diagnostic information to be reported to the family or welfare physician or health officer.

Crippled Children's Services—The State Service for Crippled Children is complete and extensive—even so, it requires full coöperation of all interested local agencies to fulfill its functions. Therefore, the prevention and correction of physical handicaps due to bodily defects is an important duty of public health nursing. This is especially true because nearly all these conditions need supervision over long periods of time in order to be cured. The nurse works with the individual physicians in the care and supervision of these cases.

Proper prenatal care, adequate delivery service, and effective training of the mother in the care of the newborn are preventive measures. Due to the close contact with the patient the public health nurse may discover deviations from the normal—not only in the infant, but also in the pre-school and school child. The parent must be made to see that the child requires regular and continuous medical care.

Records of local orthopedic and cardiac cases and those of other physical defects should be as complete as possible and checked frequently with the state field representative of Bureau of Crippled Children Services. The nurse's duties in the individual case lie in the education of the family in the care, the demonstration, and instruction in home nursing, the general health supervision of the afflicted child, and the supervision of therapeutic exercises recommended by the physician in charge. Actually, the nurse will aid in every way the rehabilitation of the patient.

NOTE: This above guide for Public Health Nursing Service has been approved by the Council of the Minnesota State Medical Association and is published for the information of the profession.

PROCEDURE FOR COLLECTING MEDICAL BILLS FOR SERVICES TO THE INDIGENT

April 7, 1943

Mr. R. R. Rosell, Executive Secretary
Minnesota State Medical Association
Saint Paul, Minnesota

My dear Mr. Rosell:

Judging from letters which pass through the office of the Medical Unit of the Division of Social Welfare, many physicians of the state are not properly informed regarding the procedures necessary to collect bills from townships and counties for medical care of paupers or the indigent sick. In the light of this fact, the suggestion has been made that I write you some of the pertinent details of this controversial matter with the hope that the information be circularized in some manner to the physicians of Minnesota.

With indigent or pauper cases, as well as others, there are two types of medical care, emergency and nonemergency. Both the emergency and the nonemergency cases can be of either a surgical or medical nature. It is a common fallacy in the minds of both physicians and social service workers to think that emergency cases are of necessity only surgical, and vice versa that medical cases are always nonemergency. There is the medical emergency case, and also, there is the surgical nonemergency case.

Only in the nonemergency case, be it of a medical or a surgical nature, is authorization in writing necessary before a township, municipality or county can be held legally liable for the bill. Such authorization must be obtained from the chairman of the town board in a county operating under the township system of poor relief, or from the executive secretary of a county welfare board in a county operating under the county system of poor relief. Even in some counties operating under the township system of relief, the executive secretary of the county welfare board is delegated to issue such authorizations.

In indigent emergency cases, either medical or surgical, it is not necessary to have written authorization to care for the case before the bill for medical services is legally collectible from either the township or county. It is necessary, however, that within a reasonable time after the performance of such emergency service the proper authority be notified that the service was rendered. Within a reasonable time has been interpreted to be within 48 to 72 hours. The proper authority to notify is the chairman of the town board, or the executive secretary of the county welfare board. The method of notification, in order to have the bill legally collectible from either the township or county, is in writing. Not only is it advisable to keep a duplicate copy of such notification, but a return receipt from a registered mailing of the notification should be secured.

It is apparent in both of these procedures that authorization in writing is not necessary until the case has been fully investigated by the proper social service work-

(Continued on Page 669)

Minneapolis Surgical Society

Meeting of November 5, 1942

President, Richard R. Cranmer, M.D., in the Chair
Secretary, R. F. McGandy, M.D.

NONCLOSURE OF WOUNDS IN ACUTE APPENDICITIS AND THE USE OF THE GIBSON-MICKULICZ TAMPON

ARTHUR F. BRATRUD, M.D.

Minneapolis, Minnesota

Definite advances in the treatment of acute appendicitis have been made ever since surgical removal was advised for its treatment and cure. Ochsner's treatment was quite universally recognized as the method of choice for years, and later this was very much improved by the use of intravenous solutions, duodenal suction, and supportive measures. Very little attention and very little publicity has been given to the nonclosure of wounds which was used by MacLaren as early as 1904, and also by Gibson who stresses the importance of the Gibson-Mickulicz tampon in the suppurative and ruptured type of appendicitis. It is my aim to present this phase of the treatment of appendicitis as well as to present a summary of the cases treated by myself at new Asbury Hospital.

All patients with acute appendicitis cannot and should not be treated by the same procedure. The treatment should be individualized. Ochsner's old dictum that after 48 hours all patients with appendicitis should be treated by conservative measures should be abandoned. Most such individuals should have surgical interference as soon as seen. However, when a patient is seen late and rectal examination shows an abscess in the cul-de-sac, this patient should be drained by rectum and then an interim operation performed as the mortality rate with this procedure is practically nil. In a fulminating case of appendicitis, it is better to remove the appendix and use either a McBurney incision with non-closure of the wound plus rubber tissue drains or a Gibson-Mickulicz tampon which should be removed from the second to the fourth day. Drains after this period are of no value except to drain a very limited area. If a right rectus incision is used, then a Gibson-Mickulicz tampon, which will be described later, should be used. If a Gibson-Mickulicz tampon is not available, a rubber glove can be used in a similar manner. Much too little attention has been given to the recognition and treatment of acute appendicitis with peritonitis or abscess by the methods mentioned.

Some 339 cases of acute appendicitis have been reviewed. The leukocyte count varied from 6,200 to 47,000.

The duration of stay in the hospital varied from five to forty-one days, with an average of 10.98 days of hospitalization. Of the series, there were 330 immediate operations, the appendix being removed in all but one case. This was a case with a very large abscess which had been present for several weeks, and no attempt was made to locate the appendix. Local anesthesia, local anesthesia with nitrous oxide, ethylene, ether or spinal was the choice of anesthesia in the order mentioned in every case. Consideration was given to a patient's objection to local anesthesia. Nine patients were not operated upon immediately, except that rectal drainage was performed on three as soon as an abscess in the pelvis pointed sufficiently low down to make this procedure free from danger. Six patients were treated conservatively with hot packs, nasal suction and intravenous solution until the blood picture appeared more favorable. These were individuals who showed definite signs of a general spreading peritonitis, general rebound tenderness, tenderness over the entire abdomen, distention, marked nausea or vomiting. Those who had drainage with nonclosure of the wound had an average stay at the hospital of 19.14 days. In this series there were forty-two such cases. There were three deaths in 339 cases giving a mortality rate of .9 per cent.

Gibson-Mickulicz Tampon.—The drain (Figs. 1 and 2) is described by Gibson as consisting of an outer enveloping layer of dental rubber dam or gutta percha. It should be cut in squares measuring anywhere from twelve to twenty inches, depending upon the size of the cavity. If it is folded as per sketch in the form of a cornucopia, the apex, which will be at the lowest part of the drain, is cut off so as to leave a hole about a centimeter in diameter. Similar areas should be cut out about one or one and a half inches above and apart as in Figure 2. When the drain is inserted into the abdominal cavity, the index finger is placed at its apex. (Fig. 3) and carried to the bottom of the cavity. The edges of the rubber drain are then spread out and gauze strips are packed into the drain so that the intestines are held away from the wound edges. The gauze is removed in from twenty-four to forty-eight hours, and the entire drain is seventy-two hours. By this time there is a well walled off cavity with wide open drainage and with the omentum and bowel held away from the wound edges.

Complications.—Only one patient developed a subdiaphragmatic abscess. This patient was drained by a posterior, extra-pleural, extra-peritoneal approach, and made a very nice recovery. Only one patient devel-

oped intestinal obstruction. This was relieved and good recovery ensued. Only two postoperative hernias were operated upon and nothing definite is known in regard to the number of other patients who may have developed hernias postoperatively as it is impossible for a patient to diagnose an incisional hernia, except when the protrusion is so large that it cannot be mistaken for any other condition.

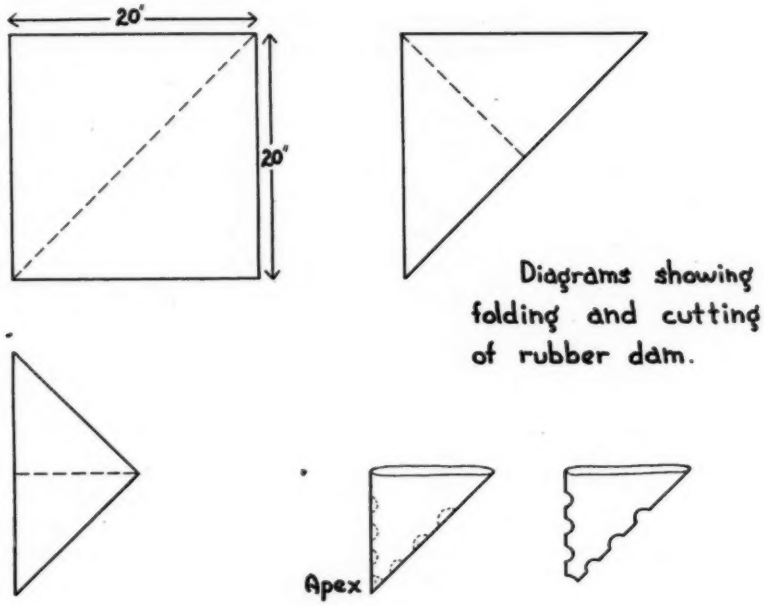


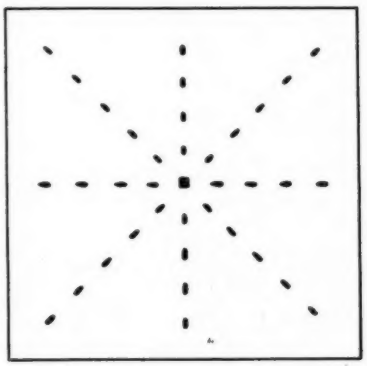
Fig. 1.

Operative Procedure.—Where a positive diagnosis was made, a McBurney's incision was always the incision of choice. If the appendix was retrocecal and difficult to remove, the incision was extended upward and the muscles spread higher up as in a McBurney incision, and the appendix was then removed retrograde through the higher abdominal opening without cutting or traumatizing the muscles severely. The appendix stump was inverted if this could be performed easily, although I can see no material advantage in the procedure. When the appendix was gangrenous, the gangrenous meso-appendix was removed as completely as possible with high ligation of the vessels with the idea that this method would probably aid in preventing hepatic or subdiaphragmatic complications. Where gangrenous appendices were found and operation was performed within thirty-six to forty-eight hours, the wounds were closed without drainage, unless the involvement had reached the state of a soft macerated mass. If an abscess, localized peritonitis, or general peritonitis was present, non-closure of the wound with either type of drainage was performed. Strapping of the wound is performed by using a two-inch strip of adhesive which has been flamed with either an alcohol lamp or a flame made by pouring a small quantity of ether on a piece of cotton held with a forceps.

Drainage.—In the presence of a ruptured appendix or an abscess where a McBurney's incision was used, a rubber tissue drain was inserted into the lateral gutter or into the cul-de-sac or both, depending upon the location of the appendix. If a large quantity of pus was found, a Gibson-Mickulicz tampon was used. If the appendix was retrocecal, then a drain was inserted in the lateral gutter as well as into the cul-de-sac. Where a right rectus incision was used, and a general peritonitis was present or an abscess was found, a Gibson-Mickulicz tampon was inserted. The peritoneum was closed loosely around the drain, and the wound was then strapped with two-inch flamed adhesive, the adhesive passing across the abdomen from well out over the iliac crests. Care should be taken so as to evert the skin edges. No sutures are placed in the muscle, fascia, or skin in either incision.

Observation of Wound.—These wounds heal by primary union except in the drainage area, and without any evidence of infection in the tissues. To lessen the element of a postoperative hernia, a number of years ago I applied clamps or homostats to the edges of the fascia so as to bring the fascia edges together, and then removed them in forty-eight hours. Infection of the fascia with sloughing always followed and required a much longer stay in the hospital and without

doubt, an increased chance for the development of postoperative hernia on account of the sloughing of the aponeurosis of the external oblique muscle. This observation shows that fascia does not tolerate trauma in



Showing distribution of holes.

Fig. 2.

the presence of infection, and that it must be handled as carefully as other tissues. Another interesting observation was the fact that if these patients developed a hernia, the repair of the hernia would be the same as closing any operative wound as there had been no sloughing of the fascia or muscle. Where there has been an infection in a wound and a hernia resulted, the fascia as well as the muscle is usually separated widely. Practically all wounds are healed completely in from fourteen to twenty-one days. In cases where no suture had been used in the abdominal layers, the fascia was thicker and stronger at the hernial opening than laterally or mesially where it was of the normal thickness. This is just the opposite of what is found in incisional hernia which follows wound infection.

When wounds are not sutured and drains are used as above described, the patient's convalescence is much smoother. There is no induration, infection, stitch abscess, or residual abscess in the abdominal wall. No sloughing of the fascia results unless it has been traumatized. No phlegmonous or gangrenous condition of the wound is ever seen, as so frequently happens when the wound has been sutured in the presence of a severe infection. There can be no question but that the added toxemia from a badly infected or sloughing gangrenous tissue may be a big factor in determining the outcome. It is a well-known fact that the peritoneum is very resistant to infection and will tolerate a large amount of trauma. It is a fallacy to believe that drains left in the abdominal cavity for more than two to four days serve any purpose except to drain a very small walled off area. There is no pain in these wounds postoperatively. Eviseration can occur, but the danger of this is so extremely small, that it does not require consideration.

Conclusions

1. Abscesses pointing in the rectovesical pouch should have transrectal drainage.

2. There is less danger of spreading infection with

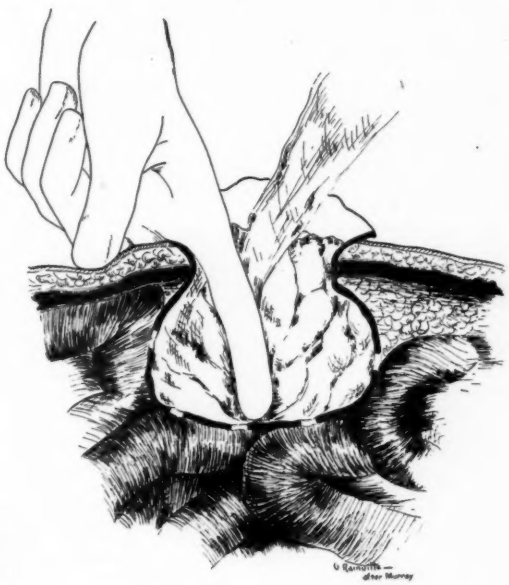


Fig. 3. Method of introduction of tampon.

a McBurney incision and rubber tissue drains than with a right rectus incision and a Gibson-Mickulicz tampon.

3. The mortality rate can be lowered by the nonclosure of wounds and the use of rubber drains or a Gibson-Mickulicz tampon as described.

4. With nonclosure of wounds, there is never any infection, phlegmonous infiltration, or sloughing of the tissues, unless they have been traumatized.

5. There is less postoperative pain and convalescence is much smoother in nonclosure than when the wound has been sutured.

6. The danger of evisceration and hernia is no greater with this method of surgical treatment than when the wound has been sutured.

Discussion

DR. R. C. WEBB: This presentation of the use and value of the Gibson Rubber Dam Tampon method of drainage in certain cases of appendicitis greatly interests me because it was in October 1923 that I presented a paper before this society on the same subject. I had introduced this method of drainage on the surgical service of Doctor A. A. Law at the University Hospital. Doctor Archibald MacLaren had become interested in the procedure and very kindly attended our meeting and opened the discussion of my paper. Since that time the method has very slowly gained some acceptance in this vicinity, and I of course feel that Doctor Bratrud should be commended highly for bringing it again before the society in this convincing manner.

When Doctor Gibson used this rubber dam tampon drain at the New York Hospital he often called attention to the comfort and to the freedom from pain which this drain afforded the patient. We used this drain on his service only in the cases which were the most severe and which called for the most extensive drainage. Such cases were at that time treated in some places by the nonoperative, so-called conservative, method. In a series of one hundred and twenty cases where this drain was used at the New York Hospital, published in 1916, the mortality was 12.3 per cent. When one remembers that these were charity patients in a large city more than twenty-five years ago, before the days of Miller-Abott tubes, intravenous vitamins, and sulfa drugs, we must realize that the mortality statistics compare more than favorably with the nonoperative reports of today. At that time all cases of appendicitis were operated upon on Doctor Gibson's Cornell University Service. There were no cases subjected to the nonoperative treatment in his clinic although Deaver in Philadelphia and Ochsner in Chicago were advocating nonintervention in certain types of cases of appendicitis.

Some of the deaths in operated cases of appendicitis can, I believe, be attributed to an infected wound. The infection in other wounds can kill patients, and I see no reason why the added burden of an infected abdominal wound cannot be an extra load which causes the death of a person who is battling peritonitis. Those who have had experience with the rubber dam tampon method of Gibson and who understand its use know that there is no appreciable infection of the abdominal wounds.

When the rubber dam tampon drain is used there are fewer fecal fistulas than with many of the other methods. There are fewer hernias than with other methods of drainage. Doctor Bratrud's colored pictures have shown the beautiful healing of these wounds. Those who are unfamiliar with this method are always astonished when they are told that they are looking at a healed abdominal wound which has healed without the use of a single stitch. Hernias occurred in 17.5 per cent of a series of one hundred twenty cases reported by Gibson. We should not be worrying about hernias when we are attempting to save lives endangered by appendicitis. However, if a hernia does occur with the Gibson drain it is not difficult to repair because we did not have an infected wound with sloughing fascia, but we had an uninfected wound with all of the layers intact and they can be separated and sutured easily.

Doctor Gibson spoke of his rubber dam tampon method as a modification of the Mickulicz drain. The drain which Mickulicz used was a square of gauze with a stout piece of silk fastened in its centre. The square of gauze was placed in the area to be drained and gauze wicks were packed into this square of gauze, and the piece of silk was brought out through the center of the series of gauze wicks. After five to seven days the gauze wicks were removed by Mickulicz and then the square of gauze was pulled out by means of the string. Gibson's associates called the rubber dam tampon the Gibson drain. One does not need a general anesthetic to remove a Gibson drain, and this alone should justify an American name for this American method of drainage.

Dr. James Hayes: I was interested in hearing Dr. Webb discuss his experience with the Gibson Drain once more. No doubt it was a good drain and accomplished its purpose. I used this type of drain several times after listening to Dr. Webb twenty years ago.

I find now that a drain many times smaller will do just as well. I use the large antiseptic pack on the abdomen with every ruptured appendix. This serves a dual purpose. It reduces the virulence of the infection and keeps the wound wet and draining. When a wound becomes dry the drainage stops; if wet, drainage continues. If used properly nothing will give a better wound in these cases. Many surgeons advise spinal anesthesia in these cases. It gives a quiet abdomen and does not scatter the pus and infection.

Dr. Stanley Maxeiner: With reference to Dr. Hayes' remarks concerning the use of spinal anesthesia, I agree with him to the utmost that spinal is a marvelous anesthetic, especially in selected cases. However, I would call attention to Babcock's warning that those cases depleted by sepsis and by intoxication, the result perhaps of obstruction, in whom there is already greatly reduced resistance and lowered blood pressure, should not be given a spinal anesthetic.

I visited Babcock personally at the time that he had done fifteen thousand spinals and saw him operate upon a patient with peritonitis and another with intestinal obstruction under local anesthesia. He warned at that time that those patients with reduced general vitality and waning blood pressure should not be operated upon under spinal anesthesia.

Dr. Willard D. White: That the question of appendicitis and the treatment of this condition and its complications are of general interest and great importance is proven by the fact that almost anytime these subjects come up for discussion either at a regular meeting or at an informal gathering such as occurs in the staff room of almost any hospital a lively debate is apt to follow. I would like to emphasize what Dr. Bratrud has brought out that when an abscess has formed in the region of the appendix the incision should be made if possible directly over the abscess. Consequently a McBurney incision is more frequently to be used when an abscess has formed. In my opinion it is advisable to remove the appendix if it can be done without spreading the infection by breaking down the abscess wall and also there is a very distinct advantage in avoiding the use of any sutures and packing the wound open. I have used a rubber glove for this purpose many times. This of course is a modification of the old Mikulicz gauze pack which was modified by Gibson in the use of a perforated rubber dam. The rubber glove with the fingers cut off flush with the hand part of the glove makes a convenient device. Gauze strips are pulled down through the wrist and hand part of the glove and one strip comes just barely through the opening made where each finger is cut off. This makes one big drain which can be inserted in the abscess cavity and the hand and wrist part of the glove are then stuffed with gauze. No sutures are used in any of the layers. If the packing is properly put in it will keep the intestines from extruding. The first postoperative day the gauze is begun to be removed and usually each day a little more is taken out, so that the whole drain is removed in four to five days. Avoiding the use of any stitches will avoid the formation of slough and infection in the abdominal wall.

Appendicostomy is a procedure which is very useful in cases of ruptured appendicitis associated with diffuse general peritonitis. This has been used for many years. It was written up in the *Annals of Surgery* in 1934 by Eli Sherman Jones, and many surgeons had used this method for many years previous to that. After the appendix is removed a catheter about size 16 French is introduced into the cecum through the stump of the appendix and sutured in place with plain catgut. The catheter is brought out through the omentum and abdominal wall. This allows the escape of gas and fluid and is very useful in preventing distention of the colon which is so apt to imperil the circulation and peristalsis of the colon. It also enables the introduction of normal salt into the colon.

Dr. Ivar Sivertsen: I am very happy to say a few words about Dr. Bratrud's subject. Some years ago we reported a series of appendicitis and peritonitis cases, localized or generalized, only, however, about 139 cases. In this series we had nine deaths. The patients who

died had all been ill for about six days. At this time we were using ether in the belly cavity, which also means chemotherapy. In the past few years we have used chemotherapy (sulphanilamide) in all cases of peritonitis, localized or generalized, without a death. Our procedure is to use 8 Grams of the sulpha drug per 100 pounds of body weight. The Roosevelt Hospital in New York City has reported 300 cases of appendicitis with abscess or peritonitis without a death, using the same amount of sulfanilamide and a small Penrose drain. The drain is left in place for twenty-four to forty-eight hours. We have found a simple method for removing the drain, to wit: grasping the end of the drain with an artery forceps, twisting it in the form of a rope, and in this manner it comes out very easily and does not bring out bowel or omentum. We also give sulfa drugs intravenously and orally after the operative procedure. We have been a bit skeptical about leaving the wound open in these cases. Postoperative herniæ have been few. If a postoperative hernia needs repair, we simply open the skin and fascia, bring the muscles across without making an opening into the abdominal cavity. The question of anesthesia is important only to the extent that whatever anesthetic is used, one should be certain that the patient does not have too much of it. Our incision has been a modified right rectus. The right rectus muscle is pulled medially. There is no difficulty in reaching the peritoneal cavity, and the incision is extended upward or downward as necessary.

As to a tube in the cecum, mentioned by Dr. White, I believe Dr. Cooney of Princeton, Minnesota, was the first to use this procedure thirty or more years ago. I never invert an appendix and, since using cigarette drains, have never had a fecal fistula.

Dr. A. Bratrud (closing): I wish to thank the various members for the very liberal discussion. The time for removal of drains has always been a much discussed point. It is useless to allow any drain to remain in the abdominal cavity for more than forty-eight to seventy-two hours. Experimental work on dogs has shown that a drain placed in the abdominal cavity is practically walled off in six hours.

As to the value of sulpha drugs, they no doubt have value whether the wound has or has not been sutured. It is not necessary to use these drugs in the wound as it never becomes infected unless the tissues have been traumatized. Time and statistics will confirm the present opinion that the sulpha drugs in the peritoneal cavity do have definite therapeutic value in suppuration, local, or general peritonitis.

In regard to postoperative hernia, I believe there is much less danger of these developing where wounds are not sutured in the presence of infection, than when the wound has been closed with a resultant infection of the abdominal wall. Observation has shown that there is proliferation of the fascia in these drainage cases and not suppuration, sloughing, induration, or even gangrenous destruction of the tissues of the abdominal wall.

MECKEL'S DIVERTICULUM

JAMES A. JOHNSON, M.D.

Minneapolis, Minnesota

Meckel's diverticulum is an embryologic remnant of the omphalomesenteric duct. In 1812 Meckel first accurately described this condition, its embryological origin and the diseases to which it was subject. When the embryo is about five weeks old, the duct has no further function and normally disappears. Meckel's diverticulum is the most common form of embryologic remnant. There are, of course, several other forms which I shall not describe here but which I will illustrate by slides. Meckel's diverticulum is present in about 2 per cent of all persons and is said to have more potential danger than the appendix. Its dangers are chiefly mechanical and inflammatory. It is a chief causative factor in approximately 3 per cent of acute mechanical obstructions of the small bowel. It occasionally becomes inflammed like an appendix and because of its wide opening into the bowel it also becomes a lodging place for foreign bodies which occasionally perforate.

On December 7, 1922, I presented a paper before this society, describing the embryologic origin of Meckel's diverticulum and all of the various remnants of the omphalomesenteric duct. At that time I reported three cases in which Meckel's diverticulum caused intestinal obstruction. On August 30, 1925, I encountered another case of acute intestinal obstruction from a Meckel's diverticulum. This I reported about five years ago before the Minnesota Academy of Medicine.

I am reporting now the fifth case of Meckel's diverticulum causing acute intestinal obstruction. The purpose is to again call your attention to this condition.

John B., aged ten, was a normal boy who had always enjoyed good health, except for occasional transitory cramps. During the afternoon of September 3, 1942, he had attended the state fair and indulged considerably in candy, popcorn and soft drinks. That afternoon he had abdominal distress but slept most of the night. The following day in the late forenoon, he was suddenly seized with a severe pain in the right lower abdomen. He was seen by his family physician during the afternoon who at once recognized the seriousness of the condition and sent him to the hospital. When he entered the hospital he had no fever, his leukocyte count was 18,000 and the urine was normal. He was very tender over the appendix at which location a mass could clearly be felt. A diagnosis of acute appendicitis or a possible mechanical obstruction due to intussusception, was considered. Operation was advised and undertaken at once.

On opening the abdomen there was an intussusception of the lower part of the ileum into the ileum and this in turn had intussuscepted into the first part of the ascending colon. The intussusception was reduced with considerable difficulty. The bowel was in good condition. At about eighteen inches from the ileocecal valve there was a Meckel's diverticulum with a broad base and a separate mesentery. The diverticulum had inverted itself into the bowel and thus being caught in the peristaltic wave was responsible for the intussusception. The diverticulum was everted after the intussusception had been reduced. It was resected and the bowel was closed with catgut. The appendix was very long and distended, perhaps largely from pressure, and was, therefore, removed. There was a thin pus secretion in its tip. There was considerable free fluid in the abdomen which was aspirated. The abdomen was closed in layers in the usual manner without drainage. The postoperative course was uneventful and the boy left the hospital on the thirteenth day.

The Alaska salmon industry will produce this year, it is estimated, over 5,000,000 cases of packed salmon with a valuation more than seven times the amount paid Russia for Alaska in 1867.

* * *

Brazil is troubled with the problem of using 4,000,000 boxes of oranges which normally would go to Europe; free distribution at government expense to soldiers and school children solves it in part.

Minnesota Academy of Medicine

Meeting of April 14, 1943

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Minneapolis Club on Wednesday evening, April 14, 1943. Dinner was served at 7 o'clock and the meeting was called to order at 8:25 by the President, Dr. Harry B. Zimmermann.

There were forty-seven members and two guests present.

Minutes of the March meeting were read and approved.

The following men were elected as candidates for membership in the Academy: Dr. Thomas J. Kinsella, Minneapolis; Dr. Victor Hauser, Saint Paul; Dr. Donald C. Creevy, University; Dr. Leo G. Rigler, University.

The scientific program followed and consisted of one thesis.

CHANGES IN THE GASTRIC MUCOSA RELATED TO DISEASE

JAMES B. CAREY, M.D.

Minneapolis, Minnesota

Correct interpretation of changes in the gastric mucosa induced by various deleterious agencies must be based upon a thorough acquaintance with the appearance of the normal mucosa and knowledge of the effect upon it of manipulation incident to the examination and of physiologic activity and of nervous influences. The normal mucosa is glistening, orange red, smooth in the antrum and along the lesser curvature, but thrown into folds on the greater curvature and posterior wall. Contractions are ordinarily seen only in the antrum. Preliminary intubation for purposes of emptying the cavity may bruise the tops of the mucosal folds adjacent to the cardia, along the posterior wall and even, if the tube is forced too far, at the greater curvature. If suction has been forceful, through either large or small bore tubes, hemorrhagic blebs simulating mucosal lesions may be noted. Such traumatic hemorrhagic areas may be easily distinguished from the true sub-mucosal hemorrhages of inflammation by the experienced gastroscopist.

Air inflation of the stomach, necessary in order that the surfaces may be projected far enough away from the objective to be seen clearly, may flatten the smaller and narrower folds of the anterior wall, but seldom affects those of the greater curvature or posterior walls. Occasionally, air pressure sufficient to bring into view a few blood vessels above the angulus along the lesser curvature may be tolerated by the unanesthetized human patient. A few large blood vessels are normally seen in the fundus of the stomach. The gastric mucosa may be thinned in the anesthetized dog by air pressure to a degree that blood vessels are seen in all parts of the stomach. Even in dogs, however, the mucosa can never be stretched by inflation to an extent that it appears gray; some color always remains. It is not possible to mistake the effect of inflation for atrophy of the mucosa.

The stomach should, of course, be empty when examined, for obvious reasons. Experience with dogs leads to the opinion that the character of food habitually eaten by the patient may have something to do with the appearance of the gastric mucosa. That is to say, when dogs are fed the ordinary hospital scrap food, the gastric mucosa is engorged, or hyperemic, with an excessive amount of mucus and appears at times granular—a condition easily mistaken for a mild degree of superficial gastritis. For this reason, minor changes of this character are generally disregarded in examination of the human patient. Such changes are not observed in the dog's stomach when specially prepared dog food is used. Other criteria of gastritis must be present to warrant the diagnosis of actual gastritis.

We have not been able to identify with certainty changes arising from a disturbed mental state of the patient at the time of examination, other than excessive muscular activity, expressed as unusually powerful contractures of the antrum and pylorus or localized spasms in the body of the stomach. The vascular effects noted by Wolf and Wolff in the gastric mucosa of their human subject with a gastric fistula, in response to emotional stress, have not been uniformly observed in ordinary gastroscopic examinations. To be sure, some stomachs seem to be redder than normal, with more generous amounts of secretion, which phenomena are undoubtedly neurogenic, but investigation of the state of mind of each individual at the time of examination has not been attempted.

Atropine, together with codeine, is given subcutaneously to each patient before examination, for the purpose of diminishing the salivary flow. In the dog, atropine dries the mucosa within three minutes after injection of amounts from .009 to .062 mg. per kilo. The mucosa appears lusterless and granular, and the quantity of secretion is small. This effect gradually wears off. With this in mind, similar changes often noted in human patients have been ignored as implication of disease. The influence of atropine upon muscular activity of the gastric wall in anesthetized dogs is less constant. In some, atropine in amounts above 0.20 mg. per kilo, results in loss of tone as estimated by flattening of folds and greater tolerance for increments in air pressures. In the amounts given to unanesthetized patients, the effect of atropine is negligible.

Continuing the study of drug effects, Layne found that pilocarpin, in amounts of .048 to .47 mg. per kilo, increased secretion, caused hyperemia of the mucosa and increased gastric tone and peristalsis. Benzedrine sulfate, in amounts of .39 to 1.12 mg. per kilo, administered subcutaneously, produced mild hyperemia, slightly increased secretion but diminished tone.

The only dietary studies so far made have been with nicotinic acid. By feeding a Goldberger diet, black tongue was induced in dogs. Beyond a transient hyperemia of the mucosa, no other change was noted in the stomach. Pallor of the mucosa was noted correlative to the degree of anemia.

Acute gastritis may occur during an acute phase of infectious diseases as noted by Faber in children with diphtheria, meningitis and some of the exanthemata. Degeneration and ulceration of the gastric mucosa may accompany terminal stages of nephritis with uremia or of diabetes with acidosis. Chemical insult by strong acid or alkali solutions may cause hemorrhagic gastritis. Congestion and edema may follow ingestion of salicylates. All of these circumstances have been observed gastroscopically in isolated instances.

Large quantities of alcohol taken during a short period of time into an otherwise empty stomach produces at times acute hemorrhagic gastritis. We have seen several cases of the kind. Chronic alcoholism does not invariably produce gastritis. Gray and Schindler, and Berry have studied patients known to have consumed large quantities of alcohol over long periods of time. The incidence of gastritis was not greater than 45% in 100 individuals examined by Gray and Schindler. Berry found 35% of 100 alcoholics with mild superficial gastritis, 35% with definite chronic gastritis. None of these investigators was able to correlate the quantiy of alcohol consumed nor the duration of the addiction with the presence, kind or degree of gastritis.

Layne fed 4 dogs 75 c.c. of 20% alcohol every day for 906, 799, 394 and 336 days respectively. Within the first week or ten days generalized hyperemia of the mucosa was noted, which persisted for three to five weeks, then gradually subsided and finally entirely disappeared after about one hundred days. The mucosa thereafter remained normal in spite of continuous administration of alcohol.

Patients with pulmonary tuberculosis have been examined by Flexner and Baum, and by Hardt. No specific lesion was noted, the type of gastritis found being generally superficial or atrophic, a condition quite compatible with either a febrile or a dietary deficiency state. The gastric mucosa of patients with sprue was found to be generally atrophic by Olleros.

Unless directly invaded, the stomach of patients with syphilis is not appreciably affected by the disease. In 1938 Ylvisaker and I reported the first gastroscopic observation in the English literature of syphilis of the stomach of the linnitus plastica type. The walls of the stomach were thick and stiff, contracting the entire lumen and obliterating all usual landmarks and folds. After treatment the walls became flexible, folds and anatomical features were recognizable. A third examination, after cessation of treatment for six weeks, revealed an appearance similar to that observed at the first examination. Gummatous and ulcerative forms of gastric syphilis have been described.

Very few patients with gall-bladder disease have gastritis; at least, Howard, investigating cholecystectomized patients to determine the cause of residual symptoms, did not find gastritis often enough to account for the complaints. In a discussion of superficial atrophic gastritis, Barnett noted the occurrence of this form of gastritis in patients with the so-called mucous colitis syndrome. Submucosal hemorrhages were common in these patients.

Conditions seen in stomachs which have been operated upon in various ways have been described. When patients have persistent symptoms following gastroenterostomy or resection, gastritis, recurrent ulcer, stomal or jejunal ulcer are invariably discovered. It is possible that many such patients had gastritis before operation, a circumstance which emphasizes the necessity of pre-operative gastroscopic examinations.

The relation of gastritis and ulcer has still not been settled to the complete satisfaction of gastroscopist, surgeon and pathologist. The viewpoint of the gastroscopist, seeing the surface of the living mucosa with free circulation and intact nerve supply, is indubitably different from that of either the surgical pathologist, dealing with traumatized tissue, or of the autopsy pathologist examining dead, fixed tissue. The endoscopist must infer from the appearance of the surface of the mucosa the condition of the submucosal structures. The surgical pathologist must discount the effects of interference with blood supply by ligation of vessels and the traumatic results of clamping and manipulation of the stomach wall incident to operations. The anatomical pathologist must properly evaluate historical evidences of what may be unrelated inflammatory conditions and be resigned to the fact that the gastric mucosa is immediately affected by postmortem disintegration. The commonest lesion of the stomach, according to postmortem studies of Robertson, is submucosal hemorrhage. Such lesions may be the basis for ulcer, cancer or gastritis, but more often are not. Some European investigators have declared that gastritis is present as an antecedent condition in all stomachs subsequently the site of ulcer. Surgical experience in this country runs to the contrary opinion. The most carefully considered gastroscopic judgment is that the association of hypertrophic gastritis and peptic gastric ulcer is not invariable. In our own material, gastric ulcer is seldom accompanied by generalized hypertrophic gastritis. Duodenal ulcer and hypertrophic change in the gastric mucosa are much more commonly combined in the same patient. Hypertrophic gastritis with ulceration is a distinct condition; that is, an solated ulcerative lesion associated with generalized gastritis is not the same as a single round peptic ulcer. Hebbel found gastritis in the body of the stomach in 30 per cent of specimens examined from resected organs and gastritis of the antrum region in 100 per cent of specimens. The activity of the process or the relation to the extant ulcer was not always apparent. Ylvisaker and I found gastritis of the antrum in eleven of seventy patients with duodenal ulcer. The gastric mucosa was normal in sixteen patients with duodenal ulcer, about 23 per cent, a ratio comparable to the number of normal stomachs in the general gastroscopic population. Or, stated another way, the incidence of gastritis among patients with duodenal ulcer is about the same as among the generality of patients examined. The difference is that the gastritis associated with duodenal ulcer is of the hypertrophic or superficial type, never atrophic.

The conjunction of atrophic gastric mucosa, achlorhydria, and anemia of either hypochromic, microcytic type or hyperchromic, macrocytic type, with polypi and with cancer is constant enough to be more than coincidental. The atrophic condition observed in patients with achlorhydria and hypochromic or microcytic anemia appears to be of a degenerative character. In certain instances, the atrophy noted in patients with pernicious anemia, and invariably achlorhydria, has shown stigmata of inflammation. Polypi occur more often in the presence of an atrophic mucosa than when the mucosa is normal. Flat, benign adenofibromas are seen in the antrum in about 5 per cent of individuals with normal gastric mucosa. But papillomatous, pedunculated polypi occur more frequently with atrophic mucosa. Generalized polyposis is difficult to distinguish from extreme hypertrophy at times.

In a study of 233 patients with histamine refractive achlorhydria undertaken with Wetherby and Ylvisaker, 132 had atrophic mucosa, forty-four had superficial gastritis, thirty-four were normal, three showed hypertrophic changes and in twenty with extensive cancer, the details of the mucosa could not be made out. Twenty of the 132 patients had polypi. In the total number of gastroscopic examinations, the incidence of atrophy with polypi is about 2 per cent, atrophy with pernicious anemia about 3 per cent and atrophy with cancer about 10 per cent; atrophic gastritis has an incidence of about 12.5 per cent. Of twenty-three patients with pernicious anemia, all with achlorhydria and atrophy of the gastric musoca, three had polypi and two had cancer. It is known that some of these patients, with atrophy without pernicious anemia, had polypi which became malignant; in others cancers developed later in the course of the primary disease. Jenner has given his experience in Amsterdam as 4.42 per cent of cancer of the stomach in 181 patients with pernicious anemia. It seems fair to conclude that atrophic gastritis conditions the individual for either cancer or pernicious anemia or for both. Eusterman's experience with 1,014 patients with pernicious anemia was that 1.7 per cent had cancer. Even this figure, and certainly Jenner's higher one, is greater than the cancer expectancy for the general population. At any rate, patients with atrophic gastric mucosa, whether with pernicious anemia or not at the time, should be examined at frequent intervals. Certainly those with polypi should be kept under close observation.

The relation between hypertrophic gastritis and cancer is not as close as that between atrophy and carcinoma. But hypertrophic ulcerative gastritis particularly of the antrum and near the pylorus, may occasionally result in cancer. Judd's recent opinion is that carcinoma develops in a previously damaged stomach, that many years of persistent injury may be required before neoplastic transformation begins, and that pathogenesis of cancer is directly related to the disorganized hyperplasia of gastric mucous cells. It would seem, therefore, that repeated examinations of the gastric musoca are indicated in patients with hypertrophic mucosa, particularly of the antrum and if at any time ulcerative.

The inescapable conclusion of all gastroscopic studies is that patients with gastric symptoms should be examined endoscopically even if associated disease apparently explains the complaints referable to the stomach, and that all patients in whom a diagnosis of gastritis has been made, particularly atrophic gastritis, should be examined frequently in order that progress of events and occurrence of certain consequences may be recognized. Examination of patients for whom operation of the stomach has been decided will yield profitable data.

Discussion

DR. R. G. ALLISON, Minneapolis: I should like to ask one question. In the case of achlorhydria, what percentage of those had gall-bladder disease? How many cases of achlorhydria were found with normal gall bladder and without pernicious anemia?

DR. CAREY, in closing: Hunter's questions, quoted by Dr. Wangensteen—Is the stomach a stewpan? Is it a vat? Is it a mixing mill?—have not yet been completely answered. The association, in pernicious anemia, of achlorhydria and intrinsic factor has not been established. Is the pyloric end of the stomach and some of the duodenum or the fundus implicated? Very few patients with total gastrectomy acquire true pernicious anemia. Anemia develops in some, but it is not a true pernicious anemia. Ivy was never able to cause pernicious anemia in totally gastrectomized pigs. In an ingenious set of experiments (confirmed by some one else whose name escapes me at the moment) Ivy fed livers from human patients who had died from gastric carcinoma to patients with pernicious anemia. The liver from the patient dying of pernicious anema, when fed to patients with pernicious anemia, did not cause maturation of the red cells or reticulocyte response. Livers from patients who had died with carcinoma of the body of the stomach contained a certain amount at least of the so-called intrinsic factor, capable of setting up the response we expect in the blood. Livers of patients who died of carcinoma of the pyloric end of the stomach, not involving the corpus, did not contain this specific factor.

In seven years of study of the gastric mucosa through the gastroscope, the association of superficial gastritis, atrophic gastritis, achlorhydria, pernicious anemia, cancer, and polypi, is of much greater importance than the so-called hypertrophic gastritis situation. There is a gastroscopic picture of what is called hypertrophic gastritis; its significance is still in doubt. I have not been able to associate it with any systemic disease except the ulcerative type of gastritis in the pyloric antrum which has a certain association with carcinoma. Gastritis of this region should be looked upon with more suspicion than that occurring in other parts of the stomach.

As for Dr. Allison's question about the association of achlorhydria, gall-bladder disease and gastritis. I think there is none. The achlorhydria that we have been attributing to the effects of cholecystitis may be functional. Certainly we do not find enough gastritis in patients with known and proved gall-bladder disease to explain any abberation in secretory mechanism.

In our studies of achlorhydria, Wetherby, Ylvisaker and I found 25 per cent of men with gall-bladder disease with no free HCl and 27.2 per cent of women; but, among patients without gastro-intestinal disease, 17.4 per cent of the men and 22.3 per cent of the women had no free hydrochloric acid.

The meeting adjourned.

E. V. KENEFICK, M. D., *Secretary.*

REPORT OF STATE DELEGATES TO HOUSE OF DELEGATES OF THE AMERICAN MEDICAL ASSOCIATION

Chicago, June 7, 8, 9, 1943

The 1943 session in Chicago of the American Medical Association showed 170 delegates present out of a possible 175, the only missing ones being those from Alaska, Philippines, Cuba, Puerto Rico and the Canal Zone.

Addresses were given by the President, President-Elect, Speaker of the House and various distinguished guests, including the Secretary of the Canadian Medical Association, General Kirk, Surgeon General of the Army, and General Grant, Chief of the American Aviation Medical Service.

The report of the Board of Trustees and Secretary showed the present membership as of April 1 at 123,000, of whom 45,000 are in the armed forces. The income for 1943 showed an increase over the previous year of $36,000 with reduced expenses of $7,000. The fellowship dues showed an increase of $9,000, advertising an increase of 26,000, investment income a decrease of $3,000, paper costs, salaries and wages an increase of $75,000, legal expense a reduction of $55,000.

There has been but slight reduction in the circulation of *The Journal*. The special journals are doing well, particularly that on "War Medicine." Due to the cost of paper *The Journal of the American Medical Association* will be a little thinner and the publication of foreign articles will be delayed.

Arrangements have been made for the continued flow of scientific articles for publication in spite of the scientific assembly not contributing papers this year. Press releases show continued growth. In 1942 there were 83,000 medical stories published and 3,800 inquiries answered.

The Bureau of Pharmacy and Chemistry has been in existence for thirty-eight years, the chemical laboratories for thirty-seven years. The Bureau on Physical Therapy made twenty-one reports on various subjects in 1942.

Prepayment medical plans are in force in twenty states and eight more have plans under serious consideration. Over 200 different schemes have been proposed. A few of the ten points emphasized in prepayment medical plans are:

1. There should be no third party involved in the relation of the patient and his physician.
2. Hospitals should not be permitted to practice medicine.
3. Radiology, anesthesia and laboratory procedures should be considered part of the practice of medicine.

Wisconsin delegates urged that state and county medical societies establish modified dues for men in service. This was not approved as so many men in service have already paid their dues and it was considered a matter for state regulations rather than for the AMA.

A bureau was established to outline and study existing schools for:

1. X-ray medical technicians.
2. Laboratory technicians.
3. Physical therapy technicians.
4. Occupational therapy technicians.
5. Medical record librarians.

Licensure in various states, including reciprocity, was considered to be within the jurisdiction of the various states and not a function of the AMA.

The principle of endorsing the study in high schools of hygiene and biology was recommended.

Indiana seemed to think that the public should have a representative in the House of Delegates but this did not meet with general approval.

Brig. General Grant of the Flight Service Medical Corps stated that last year there were ninety-seven Flight Surgeons. Today there are 9,300 and this Department has established the principle of special courses of study for this corps of medical men and 5,000 of them have already been designated to take such courses.

In 1942 a proposed amendment to the By-Laws was introduced in the House of Delegates to prevent some sixteen members of the House representing the various scientific sections from having a vote and only allowing them the privilege of the floor on subjects pertaining to their specialties. This proposed amendment was killed.

It was brought out that from twelve to fifteen million people in this country have provided themselves with hospitalization through prepayment plans. The AMA has made a study of the postwar medical program and a committee is to be set up having this function of postwar medical plans in hand.

New York introduced legislation which was unanimously adopted urging the appointment of a National Secretary of Health with the status of a cabinet member. This is but a repetition of seventy years of effort.

The outstanding discussion of the session centered over the medical service plan introduced by the Minnesota delegation according to instructions received

from the House of Delegates of the Minnesota State Medical Association. Endorsing the same principle were the delegates from Oklahoma, District of Columbia, Wisconsin, Ohio, Nebraska, North and South Dakota, New Jersey and Iowa. Indication of the general interest in this matter was the presence of some 70 delegates and others at the session of the Reference Committee which considered the resolution.

This resolution was referred to the Committee on Legislation. The final action of the entire House of Delegates was a victory in principle for the effort. The House voted and the By-Laws were amended establishing a Council on Medical Service and Public Relations which will consist of the President, President-Elect, Secretary, a member of the Board of Trustees and six members of the AMA chosen according to geographical location.

The function of the Council is to work in conjunction with the Bureau of Legal Medicine of the AMA in informing state and county medical societies of pending national legislation affecting public health and in planning for medical care for all the people.

We of Minnesota hope that this new Council may function on a national scale somewhat as our analogous state committee functions in Minnesota.

W. A. Coventry, M.D.
A. W. Adson, M.D.
J. M. Hayes, M.D.
F. J. Savage, M.D.

AMERICAN CONGRESS OF PHYSICAL THERAPY

The American Congress of Physical Therapy will hold its twenty-second annual scientific and clinical session September 8, 9, 10 and 11, 1943, inclusive, at the Palmer House, Chicago. Rehabilitation is in the spotlight today—physical therapy plays an important part in this work.

The annual instruction course will be held from 8:00 to 10:30 a.m., and from 1:00 to 2:00 p.m. during the days of September 8, 9 and 10, and will include a round table discussion group from 9:00 to 10:30 a.m., Thursday, September 9. The scientific and clinical sessions will be given on the remaining portions of these days and evenings. A feature will be an hour demonstration showing technique from 5:00 to 6:00 p.m. during the days of September 8, 9 and 10. All of these sessions will be open to the members of the regular medical profession and their qualified aids.

For information concerning the instruction course and program of the convention proper, address the American Congress of Physical Therapy, 30 North Michigan Avenue, Chicago, Illinois.

DEVELOP NEW DRESSING

Better first aid treatment for burns and wounds is promised by a new methalose gauze dressing developed by pharmacologists at Wayne University, Detroit. A soothing, healing water-soluble preparation, easily compounded and applied, are the advantages cited. Sulfanilamide and sulfathiazole are dissolved in propylene glycol, then added to a solution of alkyl cellulose.

WOMAN'S AUXILIARY

MRS. RAYMOND J. JOSEWSKI, *President*
Stillwater, Minnesota
MRS. W. H. RUCKER, *Publicity Chairman*
Minneapolis, Minnesota

CONVENTION NEWS NOTES

Thirty members were present at the pre-convention board meeting which was held at the Curtis Hotel, Monday morning, May 17. All outstanding, unfinished issues were swiftly disposed of and county reports were saved for the annual meeting. A one o'clock luncheon concluded the session.

Three-thirty o'clock found our State Board members beautifully attired and waiting to greet all convention visitors at the tea Hennepin County Auxiliary had planned for them. Mrs. Frederick H. K. Schaaf of Minneapolis is to be commended on the very beautfiul tea she and her staff arranged in the Medical Arts Lounge.

The annual convention held Tuesday morning, May 18, at the Curtis Hotel, was very skillfully conducted by Mrs. Josewski. Reports from the various counties spoke well for the part doctors' wives are playing in both war and peace activities. The meeting closed with a farewell speech by Mrs. Josewski.

Officers elected for next year are:

President—Mrs. F. S. McKinney, Minneapolis
President-elect—Mrs. Anthony Bianco, Duluth
First Vice-President—Mrs. E. V. Goltz, St. Paul
Second Vice-President—Mrs. L. P. Howell, Rochester
Third Vice-President—Mrs. J. A. Thabes, Brainerd
Recording Secretary—Mrs. E. W. Miller, St. Peter
Corresponding Secretary—Mrs. L. D. Dack, St. Paul
Treasurer—Mrs. H. W. Quist, Minneapolis
Auditor—Mrs. R. V. Sherman, Red Wing
Historian—Mrs. George E. Penn, Mankato
Parliamentarian—Mrs. James S. Reynolds, Minneapolis

During the luncheon which followed the annual meeting Mrs. F. S. McKinney was welcomed to her position as president and responded with a few words of advice to the members on ways best to serve their auxiliary and the war effort.

As a finale to the meeting several members of Hennepin County Auxiliary returned to their childhood days, at least in dress, and sang and cavorted about under the guidance of Mrs. Harold Wahlquist as "the old woman who lived in a shoe" and Mrs. Horace Newhart as the wearer of the "Old Gray Bonnet."

The evening banquet at the Minikahda Club for the doctors and their ladies proved to be a delightful affair, highlights of which were the welcoming speech of Dr. Willard White, Mrs. McKinney's response to her introduction, and the informative talk by Dr. Walter Judd.

When all formalities are forgotten many of us will still remember that last conclave in the Medical Arts Lounge. The program's prosaic announcement "Coffee and Donuts" gave no clue of what was to follow. No one wanted to go home and did not until the afternoon wore on.

It was a good convention, we all declare. We'll see you next year in Rochester.

—MRS. W. H. RUCKER

Of General Interest

Dr. R. P. Hallin of Minneapolis became associated with the Worthington Clinic July 1.

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Dr. and Mrs. A. L. Pertl of Canby are the parents of a daughter, Marion Alice, born March 27, 1943.

* * *

Dr. T. O. Wellner has disposed of his practice at Anoka and is now practicing in Rochester, Minnesota.

* * *

Dr. E. R. Addy of Gilbert, who is now in the military service in Anchorage, Alaska, has been made Post Surgeon of the army camp near Anchorage, with the commission of Captain.

* * *

Dr. Virgil Lundquist, who received his degree of Doctor of Medicine at the University of Minnesota on March 18, is now stationed at Camp Farragut, Idaho, in the medical corps.

* * *

Dr. J. R. Lenz, who has an established medical practice in Morton, is extending his practice to include three mornings a week in Fairfax. He will continue his regular practice at Morton.

Dr. Theodor Bratrud of Minneapolis received the Marquette University alumni award in May for his paper on "Adrenal Hyperptosis" submitted at an alumni clinic of the medical school in Milwaukee.

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Dr. O. K. Behr of Crookston has purchased the medical practice of Dr. G. W. Bohl at Ada and will devote three afternoons a week to the practice in Ada for the present. He is a member of the Crookston Clinic and will maintain his connection with the clinic.

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At the June meeting of the Minnesota Society of Internal Medicine Dr. Thomas Lowry of Minneapolis and Dr. Emmett E. Kenefick of Saint Paul were elected members of the society. The next meeting will be held at Saint Paul in the fall.

* * *

Dr. E. L. Stephan of Hinckley, recently completed fifty years of practice as a physician and surgeon in the same community. He was among those honored at the recent State Association meeting as a new member of the Fifty Club.

* * *

Dr. John G. Lohmann of Jasper has purchased the practice of Dr. E. F. McElmeel at Pipestone and will

move there this month. Dr. McElmeel has entered a three-year fellowship of study in ear, nose and throat diseases in Minneapolis.

* * *

Dr. R. C. Farrish, Sherburn, Dr. R. L. Parsons, Monterey, and Dr. I. Fisher, Ceylon, were recently appointed to serve as examining physicians on the draft board of Martin County, to supplement the services of the draft board located in Fairmont.

* * *

The honorary degree of Doctor of Science was conferred upon Dr. H. F. Helmholz of Rochester by the University of Wisconsin at its ninetieth Commencement this year. Dr. Helmholz is a graduate of the University of Wisconsin.

* * *

Dr. Carl Peterson, who was attending physician of the Minneapolis Symphony Orchestra on tour for two years, has opened offices for the practice of medicine at Chisago City. Dr. Peterson is taking over the practice of Dr. Lorin Olson, who is now in service.

* * *

Dr. Wesley W. Spink, professor of medicine at the University of Minnesota School of Medicine, has left for Guatamala for a month's intensive study, in a United Fruit Company hospital, of the clinical and public health aspects of tropical diseases.

Dr. E. I. Parson, who has been surgical assistant to Dr. C. H. Mead of Duluth since January 5, 1942, has been commissioned as First Lieutenant in the Army Air Forces of the United States and reported June 30 to Carlisle Barracks, Pennsylvania, for active service.

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Dr. William R. Bagley has been appointed as a member of the St. Louis County Sanatorium Commission to fill out the unexpired term of Dr. Samuel H. Boyer, Jr., who resigned to enter military service. The new term is for three years.

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Dr. Charles E. Rea and Dr. William C. Bernstein, of the University Hospitals staff, left July 1 for Knoxville, Tennessee, where they will be engaged in a war department project, the exact nature of which is a military secret.

* * *

Dr. J. H. Vogel of New Ulm completed forty years of service as a physician in New Ulm on June 19, 1943, having offices in the building occupying the same site as the one in which he started practice in 1903. Following World War I Dr. Vogel became associated with Dr. O. J. Seifert, a partnership which has continued to the present time.

Fifty years ago in June, Dr. W. M. Dodge of Farmington began the practice of medicine in partnership with his father, Dr. Levi Parker Dodge, and has continued to serve the same community during the intervening years. Medicine has been a family profession for several generations. Dr. W. M. Dodge, Jr., who has practiced as an eye and ear specialist in Battle Creek, Michigan, is now serving as a Major in the Army.

* * *

Dr. G. A. Hedberg has been appointed superintendent of Nopeming Sanatorium, succeeding Dr. A. T. Laird who has been superintendent of the sanatorium since its inception in 1912. Dr. Hedberg has been a member of the sanatorium medical staff since 1931 and in recent years has served as assistant medical director. Dr. Laird, who is retiring from active practice, will make his home in Duluth.

* * *

Dr. W. E. Macklin of Litchfield has been commissioned a Lieutenant Commander in the Navy and is now stationed at the Great Lakes Naval Training Station, where he reported for duty June 28. Dr. Macklin is the fourth in his immediate family to enter the service. Two sons, William E., Jr., and John are serving as lieutenants in the Army and Navy, respectively, and a daughter, Mary, started active duty as a member of the WAC in June.

NOTICE: The formulæ of the U. S. Pharmacopœia XII for the following preparations have been revised due to the scarcity of glycerin:

Syrupus Ipecacuanhæ is now officially made with the fluidextract of ipecac and syrup, the glycerin being omitted.

Tinctura Gentianæ Composita is made by using diluted alcohol without glycerin as the menstruum.

Tinctura Opii Camphorata (paregoric) is made by the addition of one-quarter of the amount of glycerin formerly used in the solvent.

BLONDS CRACK IN TROPICS

The average white man is not "geared to the tropics," and blonds are especially likely to crack, Lieut. Comdr. James L. McCartney declared. Of twelve cases he described, of men invalided back to the United States from the tropics in the present war, all with diagnosis of nervous and mental sickness, all were blonds.

They had headaches, scary dreams, low blood pressures, were easily tired, depressed, restless, had hallucinations and lapses of memory.

Why blonds are less able to stand the tropics was not explained but it may be because their skins are less able to withstand the intense sunlight. Comdr. McCartney quoted another scientist who had observed the effects of the tropics before the war and wrote that "tropical irritability is mostly due to the constant bombardment of the sun, for it is worse in blonds."—*Science News Letter*, May 22, 1943.

BOOK REVIEWS

Books listed here become the property of the Ramsey, Hennepin and St. Louis County Medical libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

ATLAS OF OBSTETRIC TECHNIC. Paul Titus, M.D., Obstetrician and Gynecologist to St. Margaret Memorial Hospital, Pittsburgh, Secretary, American Board of Obstetrics and Gynecology. 180 pages. Illus. Price, $7.00, cloth. St. Louis: C. V. Mosby Co., 1943.

A HANDBOOK OF MEDICAL LIBRARY PRACTICE. Janet Doe, Editor. Compiled by a Committee of the Medical Library Association. Based on a preliminary manuscript by M. Irene Jones. 609 pages. Price, $5.00, cloth. Chicago: American Library Association, 1943.

GUIDE TO PRACTICAL NUTRITION. Michael G. Wohl, M.D., and John H. Willard, M.D., editors. Introduction by Morris Fishbein, M.D. 98 pages. Philadelphia County Medical Society, 1943.

PICTORIAL HANDBOOK OF FRACTURE TREATMENT. Edward L. Compere, M.D., F.A.C.S. Associated Professor of Surgery, Northwestern University Medical School, Chairman Department of Orthopædic Surgery, Wesley Memorial Hospital; Consulting Orthopædic Surgeon, Chicago Memorial Hospital; and Sam. W. Banks, M.D., Associate in Surgery, Northwestern University Medical School, Attending Orthopædic Surgeon, Chicago Memorial Hospital. 351 pages. Illus. Price $4.25. Chicago: Year Book Publishers, 1943.

THE PRINCIPLES AND PRACTICE OF WAR SURGERY. J. Trueta, M.D., formerly Surgeon of General Hospital of Catalonia, University of Barcelona; Assistant Surgeon, Wingfield-Morris Orthopædic Hospital, Oxford; Acting Surgeon-in-Charge, Accident Service Radcliff Infirmary, Oxford. 441 pages. Illus. Price $6.50. St. Louis: C. V. Mosby Co., 1943.

One is attracted to this work by the generous acknowledgment of the author in his preface to the sources of the ideas that he has combined to make practical the treatments he advocates.

His wide experience in war emergency surgery with a resulting treatment both practical and scientific is of great importance at this time.

The handling of wounds—compound fractures—regional surgery—shock—infection—treatment of burns—varicose ulcers—skin grafting—are based on wide experience and come more nearly providing a concise outline for routine procedure than any treatise we have seen.

His application and technique in the use of plaster-of-Paris simplifies and facilitates the care and recovery of many cases that are being handled in more complicated and possibly a less effective way.

This 400-page book should be read by every general practitioner and surgeon. It is highly informative. In these days of war and our great industrial activity with an increasing limitation of professional care to an increasing civil population each physician must prepare himself for emergencies where he will be the only specialist.

WM. R. BAGLEY, M.D.

PROCEDURE FOR COLLECTING MEDICAL BILLS

(Continued from Page 650)

er. In the nonemergency case, the very nature of the illness insures several days' time for ample investigation to determine eligibility for medical care at township or county cost before authorization is issued. In the emergency case, notification of the proper authority by the physician rendering such service should be followed within a few days by an investigation of the eligibility of the patient for such service at taxpayer cost. When it has been determined by the social service worker, as the result of proper investigation, that the township or county is legally responsible for the bill for medical services of a nonemergency nature, written authorization is issued to the physician. And after notification of the performance of emergency medical or surgical services, the bill for such services should be approved as soon as proper social service investigation determines the eligibility of the patient for such services at taxpayer cost. Even when the bill is so approved, it is usually not paid until after the next meeting of either the county welfare board or the board of county commissioners.

These few points are the ones of greatest controversy between physicians and welfare or township and county authorities when bills for medical services to paupers or indigents are involved. It is sincerely hoped that this letter will provide a better understanding of some of the technicalities and thus lead to greater harmony between those who provide medical care to indigents and those who pay for such services.

Yours very truly,

EDWIN J. SIMONS, M.D.,
Chief Medical Unit Division of Social Welfare.

CLASSIFIED ADVERTISING

WANTED—Physician licensed to practice in Minnesota. Address inquiries to Dr. Edwin J. Simon, Medical Services Unit, Division of Social Welfare, 610 Globe Building, Saint Paul, Minnesota.

* * *

FOR RENT—Doctor's office in Faust Building, Saint Paul. Ideal location for branch office. Dentist now using half of building. Inquire at 626 University Avenue, Saint Paul, or telephone ELkhurst 6058.